DOCUMENT RESUME

ED 104 977 UD 014 294

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TITLE A New School for the Cities.
INSTITUTION System Development Corp., Santa Monica, Calif.
SPONS AGENCY Ford Foundation, New York, N.Y.
REPORT NO SP-3469-000-02
PUB DATE Aug 70
NOTE 179p.

EDRS PRICE MF-$0.76 HC-$9.51 PLUS POSTAGE
DESCRIPTORS Adjustment (to Environment); *Curriculum Development; Economically Disadvantaged; *Educational Innovation; Educational Objectives; Instructional Design; *School Design; School Organization; *School Planning; School Policy; School Size; Self Control; *Urban Schools

ABSTRACT

This document is the final draft of a preliminary design for a new kind of urban school. It is published in the expectation that the school it describes can and will be built and operated, in the near future. The New School is designed to be a replicatable model for the reform of urban education. The design has its origins in the conviction that such reform is desperately needed, and the linking of that convinction to the opportunity for planning that has become possible as a result of growing state and federal interest in the support of large-scale innovative efforts. The New School has the goal of teaching self-reliance and personal adaptability. Basic skills, intellectual growth, and self-reliance are considered parts of one educational fabric, and the school's programs are intended to be interdimensionally reinforcing in each of these areas. The design of our school is "slanted" toward the education of the urban poor. A fairly sizable school is contemplated--one designed for 2,600 students. Essentially, it was felt highly desirable to combine many educational innovations under one roof, so that maximum benefits could be gained from the process of mutual reinforcement. For the most part, design features are based on an extension of available education research result or successful programs whose principal features are well understood. (Author/JM)

ED104977

SP-3469/000/02

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A NEW SCHOOL FOR THE CITIES

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August 1970

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UD 014 294

ACKNOWLEDGMENTS

The authors are deeply indebted to many colleagues and critics for their assistance and support. A list of reviewers of earlier drafts of this document is included in the Appendix, but a number of people also made contributions deserving of special acknowledgment.

Without the unqualified support, personal encouragement, and perceptive criticism of Dr. Harry Silberman, Manager of System Development Corporation's Education Systems Department, this design would not have been possible. We have been privileged to have him as a friend and colleague.

Many other members of the Education Systems Department have also been most helpful, especially Dr. John Coulson, who provided a number of substantive insights, and Mr. Donald Marsh, whose work on the computer program for the logistics simulation was invaluable.

A number of contributions were made in areas of some particular specialty: Mr. Thomas Wolfe provided excellent advice regarding architectural problems, and prepared the preliminary plans used in this design; Mr. David Miller, of the Irvine Company, was most helpful in regard to questions of construction techniques, costs, and feasibility; Dr. Robert McIntyre and Dr. Charles Watts, of the Instructional Materials Center, Special Education, University of Southern California, gave particularly useful advice about curriculum development strategies; and Mr. Ray Valle, an experienced community field worker in Los Angeles, was most helpful regarding potential problems of community organization.

The authors also wish to express their appreciation to Dr. Launor F. Carter, Vice-president, Public Systems Division, SDC, for his helpful criticism and encouragement, and to Mr. Ralph Bohrson, of the Ford Foundation, for his support, his substantive suggestions, and his patience.

We take pleasure as well in acknowledging the contributions of Miss Freddie Furgis and Miss Regina Kulvinskas, who typed more drafts than they would care to remember, with skill and unfailing good humor, for long hours well beyond the call of normal duty.

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INTRODUCTION

This document is the final draft of a preliminary design for a new kind of urban school. It is a plan, not a study: It is published in the expectation that the school it describes can and will be built and operated, in the near future. As a preliminary design, it necessarily defers the detailed planning estimates that will be required as the project moves toward implementation, and while we expect the first prototype to follow this plan in most respects, we assume that it will also differ in some details, in order to accommodate particular circumstances of locale and resource availability.

The reference to a "first" prototype is deliberate; the New School is designed to be a replicatable model for the reform of urban education. The design has its origins in our conviction that such reform is desperately needed, and the linking of that conviction to the opportunity for planning that has become possible as a result of growing state and federal interest in the support of large-scale innovative efforts.

We assume that most readers of this document will agree, without the need for elaborate philosophical or empirical arguments, that the reform of urban education is not only appropriate, but overdue. That at the very least there is substantial room for improvement, especially in the schools serving the urban poor, is hardly disputable. But while most concerned educators are now convinced of the need for reform, they are usually immersed in a crisis atmosphere that does not permit them the time and perspective required to contemplate or plan important, pervasive changes. We hope our own planning efforts can be of assistance to them. We share with them the traditional goals of public education--the teaching of basic skills and essential knowledge, and the promotion of broad intellectual growth.

The New School also has another educational goal, which perhaps best defines the mood and temper of the design--the teaching of self-reliance and personal adaptability. This objective goes by many names--preparation for citizenship,

acculturation, learning decision-making skills--but related educational programs are usually considered luxuries that must defer to the more urgent requirement of teaching basic skills. In the design of the New School, we have tried to eliminate this need to establish priorities of objectives. Basic skills, intellectual growth, and self-reliance are considered parts of one educational fabric, and the school's programs are intended to be interdimensionally reinforcing in each of these areas.

The design of our school is "slanted" toward the education of the urban poor. We have attempted to create a design that will be relevant to the educational needs of all students, regardless of class or race, but, where choices of design emphasis had to be made, we self-consciously emphasized design details that were most appropriate for the education of children living in urban poverty areas. There were essentially two reasons for this approach. First, we simply made a normative decision: the urban poor are least well served by the present system of education, and their needs are greater than those of other students. In addition, we considered this to be a good "worst case" strategy: A design that emphasizes the needs of the urban poor will address the greatest range of educational problems, and include the broadest possible spectrum of design features. For situations deemed less critical than those in urban poverty areas, various subsets of these design features would be available and appropriate. We also believe that an educational design that "works" for the poor will be useful and relevant, in most respects, in more affluent areas. Middle class students do not face the same breadth of environmental disabilities, and the urgency of their educational difficulties is therefore not as great, but their essential needs (basic skills, self-reliance, intellectual growth) are no different than those of the poor, and their educational system is in most important respects very much like the system in many poverty areas.

Since the emphasis in the design is on education for the urban poor, a brief word may be in order concerning our views and assumptions about poor students. Most descriptions of poor students emphasize their deficiencies and disabilities--in academic achievement, and in economic and social skills. Inevitably, the

standard of comparison is the middle class suburban student, and the conclusion, all too often, is that the middle class, suburban educational system must be imported to poverty areas. In fact, that is pretty much the educational system that poverty areas now have--only it is largely irrelevant to the needs of poor students, because it was designed to meet the needs of the middle class and the affluent. At the same time, the real strengths of poor students are usually ignored--or assumed to be irrelevant. Yet, when one considers the personal courage, skill, and resiliency required to survive emotionally--indeed, sometimes to survive physically--much less to acquire an education, under conditions of severe economic dislocation and social pressure, and in an educational system that is geared to another way of life altogether, one must emerge, it seems to us, with feelings of deep admiration for the personal qualities displayed by many poor students. What is amazing is not that the poor do not learn, but that, given the disadvantages with which they are burdened, they learn as much as they do, and somehow manage to find the strength and courage to keep coming back for more. The New School is designed to capitalize on those attributes; it will not assume that the poor have some special inherent disability which must be overcome by special remediation; it will assume that most problems lie with the system, and with the design of the educational programs that are usually relied upon to overcome the disadvantages of poverty.

We contemplate a fairly sizable school--one designed for 2,600 students. Our reasons for designing a school of this size are explained in detail in the text of this document (see pp. 57-59); essentially, we felt it highly desirable to combine many educational innovations under one roof, so that maximum benefits could be gained from the process of mutual reinforcement. In addition, if the school is truly to be duplicatable, it must be designed on a scale that has some meaning for the real requirements of urban education.

For the most part, design features are based on an extension of available education research results, or successful programs whose principal features are well understood. Most research, quite properly, does not go beyond the presentation of analytic conclusions; only rarely are even the most general prescriptions for

change offered. It has been known for some time, for example, that public education is not a free good for poor students, that grades and other comparative indices of achievement in current use have damaging effects, that schools often make unwarranted assumptions regarding the skills of entering students, that the typical school district organization militates against curriculum continuity and efficient plant utilization, etc. But this and related knowledge is rarely translated into specific educational programs designed to ameliorate the problems that have been identified. The New School design attempts such a translation, as the nucleus of a comprehensive approach to the problems of urban education.

It goes without saying that we do not put forward this design as the answer to contemporary difficulties. We not only expect that revisions will be made; we have explicitly attempted to encourage the identification and correction of error. If there was one design principle uppermost in our minds during the course of our planning, it was the importance of maintaining flexibility and the capacity for adaptation and change. Given the nature of the problem addressed by this proposed model for reform, any other posture would surely be peculiarly inappropriate.

SUMMARY

This section provides an overview of the New School design in the form of an outline summary. The outline parallels the subsequent exposition in organization as well as content. The first portion focuses on Program Features--selected aspects of the New School which serve to highlight the design in terms of central concepts and rationale. The second portion focuses on Operational Specifications--more detailed components which serve to operationalize the school's principal design features.

Program Features

Structured and Open-ended Curriculum

- A dual curriculum is maintained. A structured curriculum for measurable educational achievement, and an open-ended curriculum for personal intellectual stimulation and growth.
  - Structured curriculum--modular, individualized, continuous progress, tutored in lower grade levels.
  - Open-ended curriculum--broadly chartered; self-directed; individual and group, with participant and spectator modes.
- The two curricula operate separately and in parallel, with different staff and resources committed to each.
- There is separate maintenance of the two curricula, to avoid potential conflict between methods that "pull" in different directions.

Learning to Preestablished Criteria

- Each structured curriculum unit will have an associated test.
- Completion of each unit will require demonstration that the student can meet a preestablished criterion of subject matter mastery.
- The criterion of mastery will be set at a high level of comprehension.
- Failure to reach the criterion will necessitate unit review or work with a corrective unit.

- There will be no "failing" marks; student progress records will simply be records of units mastered.

- Teaching and testing will be separate functions.

- After minimum established requirements are met, additional units may be undertaken at student option.

Fine-grain Student Progress Monitoring

- Structured curriculum courses of study will be broken down into small, self-contained units.

- Special efforts will be made to identify student skills and curriculum prerequisites that are assumed by the content and presentation of each new unit.

- Identification of prerequisites will be a process of continuous monitoring and revision.

- Student unit-in-progress files will be reviewed regularly and frequently so that difficulties with any given curriculum unit will not be prolonged for the individual.

- Widespread difficulties will lead to unit review and revision.

Individual Student Rooms

- Every student will have space of [illegible] own, assigned on a permanent basis.

- Student space can be used individually or, optionally, "pooled" with others in order to create a larger, collective space.

- Student rooms will be private, and accessible only to student assignees, except in emergencies.

- Basic furniture will be provided; accessories and decoration will be up to the students.

Student Job Program

- All students may work.
- The work will be real and significant; the pay real.
- The students will provide the operating manpower for the school.
- Job prerequisites will be related to academic progress, especially in the structured curriculum.

Student Academic Career Controls

- The student will largely control his own academic career decisions, both his direction and his rate of progress.
- The student will also choose the path of his work program.
- At any point in a student's school career, all existing options will be open to him.
- There will be a continuous guidance program to assist students with unit-to-unit choices.

Improved Professional Rewards

- Salaries will be raised to levels above existing average salary schedules.
- Working conditions will include privacy, secretarial and clerical support, and time for reading, study, and education.

Differentiated Professional Tasks

- Professional responsibilities will be divided into three functional areas: curriculum, practical skills, and evaluation.
- Professionals in each area will be considered independent masters of subject matter and method, and will have heavy executive and supervisory responsibilities.

System Adaptability

- Corrective mechanisms relative to the student will include fine-grain progress monitoring, procedures for identifying system or staff errors, and provisions for the necessary changes of emphasis or design.

- The structured curriculum will be subject to constant review and revision, based on statistical indices of evaluation, with student success as the basic criterion. Similar procedures will apply to the student job program.

- Overall evaluations of total system performance will also be attempted, with assessments based on general levels of functional efficiency, rates of improvement, and success in identifying and correcting system errors.

Functionally Unified School

- Grades preschool through 12 will be brought together in a single physical location.

- In terms of administration, curriculum, training, and all other functions, the school will be treated as a single entity.

Extended School Operations

- The school will be open 15 hours a day, 12 months a year.

- All programs and services will be offered from 8:00 a.m. to 5:00 p.m., and many will be more extensive.

- Child care, community recreation, adult education, and other services will be offered.

Community Participation

- The community will, from the earliest possible date, participate fully in the final design of school programs, operations, and facilities.

- The community will be asked to contribute time and skills to the educational program, school administration, student counseling and guidance, staff training, extracurricular activities, and plant maintenance.

- The community will have full access to school facilities, will make regular program and plant assessments, and will participate in the selection and review of staff and curriculum.

- School and community will come together in efforts to solve outstanding community problems.

- Community representatives will have full, regular, guaranteed access to all levels of school administration, and will establish the means for community information dissemination.

Operational Specifications

Student Body

- Student population--2,600

- Grade range--K through 12, plus preschool childcare.

- Student allocation by grade level--200 per grade.

- Voluntary enrollment.

Physical Plant (feasibility study parameters)

- Total plant size--approximately 340,000 square feet.

- Square feet per pupil--approximately 130.

- Site size--15 acres.

- Plant facilities:
  - Individual rooms (each approximately 6 x 8 feet)--2,300
  - Lecture hall/auditoriums--flexible configuration; 2 with 500 capacity each, or 6 with capacities up to 375.
  - Laboratories--4 (unit capacity: 75).
  - Small group rooms--32 (unit capacity: 10).
  - Classrooms for preschool, Kindergarten, up to grade 2--16 (unit capacity: 30).
  - Creative arts center--capacity: 300
  - Library--capacity: 200

- Testing and materials center--capacity: 200
- Cafeteria--capacity: 2,000
- Athletic field house--capacity: 300
- Administrative center--records maintenance; administration, faculty, student government and community representative offices; conference rooms.
- Maintenance, repair, stores, receiving, grounds and custodial facilities.
- Parking--semi-underground; capacity: 264 cars.

Curriculum

- Dual curriculum--structured curriculum and open-ended curriculum, separately maintained.
- Open-ended curriculum--personal, self-directed, aimed at intellectual stimulation and growth:
  - Presentations--lectures, performances, debates, etc.
    - Purpose is to see and evaluate intelect in action.
    - Program will offer a minimum of 12 presentations each week.
    - Students will attend (average of) three each week.
  - Small group meetings--projects, discussion groups, study groups, etc.
    - Purpose is to participate in cooperative intellectual pursuits.
    - Program will offer more than 200 group activities.
    - Student will select group and attend three meetings each week.
  - Individual self-directed study--personal, individual interest activities.
    - Purpose is to open school resources to individuals.
    - Program will offer resource and personnel support in all curriculum areas.
    - Students will be encouraged to use facilities and to seek assistance.
- Structured curriculum--prescribed, assessable educational achievement, individually administered:
  - Structure and organization--division of content substance into modularized curriculum units, with each course extending from K through 12; organized into network reflecting core units, alternate units, optional sequences, and specialization branches.

- Basic structured curriculum (initial planning set)--1,000 units.
- Continuum of administration--assisted instruction (continuous tutoring) to independent study (occasional counseling).
- Unit format--procedural lesson plan (between outline lesson plan and small step instruction in design specificity).
  - Format rationale--utilization of human (tutor) capacities to generalize from essential directions and adapt to unique situations.
  - Format specifications--objectives (criterion of mastery), prerequisites, materials required, administration procedure.
- Unit administration--assisted instruction administered by tutors and tutoring supervisors (students of high school age); independent study self-administered with curriculum counselors (students and faculty) available for assistance.
  - Tutor responsibility--three units each, administered one at a time, to maximum of four students at one time.
  - Curriculum counselor responsibility--content area specialist; counsels all students in independent study mode in area of speciality.
- Development and production strategy for basic structured curriculum (1,000 units):
  - Off-the-shelf materials found not completely suitable for New School design, and will not be used.
  - Procedural lesson plan format, and provision for in-process revisions, make requirements less demanding than usual curriculum development.
  - Plan to recruit full-time curriculum development panel (approximately 20 developers):
    - Will meet regularly as panel to map out unit network, to provide critical review of units developed, and to assess group progress.
    - Will work individually to develop units; average production level--three units every two weeks.
    - Will be given full support--facilities, clerical, typing, graphic, and model building.
  - Plan to retain best panel members, if possible, as Instructional Services faculty on New School staff.

Staffing and Student Jobs

- Instructional Services staff:
  - Faculty--34
  - Senior student paraprofessionals--189
  - Middle student paraprofessionals--464
- Instructional Support Services staff:
  - Faculty--14
  - Senior student paraprofessionals--40
  - Middle student paraprofessionals--100
- General Support Services staff:
  - Faculty--26
  - Senior student paraprofessionals--200
  - Middle student paraprofessionals--254
  - Junior student paraprofessionals--829
  - Beginning student paraprofessionals--689
- Student jobs--2,765 (planned positions).
- Schedule--regular daily hours.
- Work duration--1, 2, or 3 hours daily for each student.
- Pay scale--$.25/hour to $2/hour.
- Work levels--13, differentiated by job duration and pay.
- Number of work areas--21
- Total man-hours per day--6,200
- Average monthly payroll--$90,800
- Supervisory ratios--1:5 to 1:35

Operations

- Student perspective:
  - Flexible attendance requirements.
  - Wide range of scheduling options.
  - Assisted and independent study.
- Faculty perspective:
  - Eight-hour day.
  - Reserved time for professional advancement.
  - Work in "shifts."
  - Differentiated responsibilities.
- Operations overview--two parallel programs:
  - Instructional Program functions:
    - Selection of curriculum
    - Instruction
    - Evaluation
  - Job Program functions:
    - Placement
    - Work
    - Evaluation
- Program function details--Instructional Program:
  - Selection of presentations and small group meetings--student option.
  - Selection of individualized curriculum--after mastery of preceding unit.
  - Assisted instruction--with trained tutor (student paraprofessional).
  - Independent study--begun ordinarily between fourth and fifth levels of curriculum.
  - System expectation for curriculum unit completion--ten days; upper limit--fifteen days.
  - Flexible counseling assistance when required.
  - Testing to criterion of unit mastery--at time of student's or tutor's choice.

- Demonstration of unit mastery leads to continuation of Instructional Program cycle.
- Failure to meet criterion leads to counseling and rectification.

- Program function details--Job Program:
  - Job placement--at student initiation.
  - Every job potentially available to every student.
  - Explicit job prerequisites and means for qualifying.
  - Job performance in three general areas, under faculty supervision:
    - Instructional services
    - Instructional support services
    - General support services
  - Job Performance assessment by student and faculty supervisors.

- Student program scheduling:
  - Different activity distributions for different student (grade) levels.
  - Scheduling priorities: (1) student job, (2) assisted instruction, (3) presentations, (4) small group meetings, (5) independent study.
  - Testing, guidance and counseling scheduled as needed.
- Logistics--major parameters tested by computer simulation; analytic model to be modified for preservice training exercises.

Community

- Community participation in school design:
  - Full-time community organization effort.
  - Joint professional-community planning committee.
  - Community-based planning facility.

- Proposed organizational structure--nonprofit community development corporation.
  - Membership--parents of present and former students, and general membership category.
  - Voting rights--all members may vote; parents of present students have weighted votes.
  - Students and teachers participate as nonvoting members.

·Proposed community responsibilities:

- ·Contribution of practical and professional teaching and training talent.
- ·Regular assessments of school plant condition, and contribution to upgrading and maintenance.
- ·Assistance with normal and special school safety and security duties.
- ·Regular participation in counseling and guidance activities.
- ·Organization of extracurricular social and recreational activities.
- ·Responsibility for student welfare through assignment of "student clusters" (20 students) to specific adult sponsors.
- ·Provision of community "Special Resource" committee for assistance with difficult problems.
- ·Participation in pre- and in-service staff training.
- ·Participation in parent training classes.
- ·Preparation of community newsletter.
- ·Assistance to school staff in preparation of Parents' Manual.
- ·Participation in student "follow-up" program for assistance to New School graduates.

·Proposed community entitlements:

- ·Final approval of school principal selection.
- ·Participation in staff selection and transfer procedures.
- ·Participation in curriculum selection and review.
- ·Open access to all educational, recreational, and creative arts programs and facilities, subject only to student priorities.
- ·Guaranteed access through designated representatives to all levels of school administration.
- ·School staff participation in community planning and problem solving activities.
- ·Regular reports and accountability by school principal and other staff at community meetings.
- ·Basic and advanced adult education and training.

- School facility, materiel, and staff support:
  - Private office, phone, and secretarial assistance for community representative.
  - Community room available at all times for meetings or recreation.
  - Community newsletter printing facilities and assistance.
  - School "outreach" programs in community locations.
  - "Drop-in" room for student emergencies, and distribution of community emergency phone numbers and locations for student use.

Governance

- Exercise of self-government as a basic principle.
- Apportionment of authority among constituent groups:
  - Students--draft, ratify, and administer rules of conduct.
  - Faculty--substantive and operations decisions.
    - One faculty member with primary responsibility for governance.
      - Curriculum--responsibility for government and political science curriculum.
      - Training--responsibility for training in practical art of self-government.
      - Advisor--penultimate authority in school.
  - School managers--five functions:
    - Trouble shooting--solving problems of operations, especially problems of coordination.
    - Outside relations--contact point between school and other levels of authority.
    - Senior colleagues to faculty.
    - Formal board of appeal--judicial function in disputes.
    - Holders of final authority at school level.
  - Community--complete authority in areas reserved for community action, plus:
    - Participation--consultation on school policies, participation in guidance process, approval of principal.
    - Accountability--access to school administration, regular staff accounting.
    - Grievance--right to initiate complaints (subject to safeguards and protection).
  - District--retention of final authority on all school related matters; agreement to "hands-off" policy in exercise of authority.

- Procedures:
  - Consultation--policy decisions reviewed and discussed with all groups affected.
  - Initiation--formal means for requesting policy change.
  - Appeal--explicit procedures for all grievance cases, and for denials of request for change.
  - Mediation--formal and informal mechanisms for resolving disputes between constituent groups.
  - Review--procedures for regular review of school policies, by all constituent groups.
  - Ratification--policies of widespread importance subject to formal ratification by constituent groups.

Implementation and Costs

- Overall implementation schedule: 30 months.
  - Preservice training--3 months elapsed time; milestone requiring completion of all other (prior) developments.
  - Physical plant preparation--27 months elapsed time; the critical path of development.
  - Community field work--30 months continuous support to other developments.
  - Curriculum development and production--23 months elapsed time.
  - Operations analysis, preservice training program design, and job training design--18 months elapsed time.
- Implementation cost estimates:
  - Cost of physical plant, exclusive of land (estimate):
    - Total construction cost--$7.7 to $10.5 million.
    - Construction cost per square foot--$22 to $30
  - Other development costs (estimate)--total: $3.221 to $3.443 million.
    - Curriculum development and production--$1.55 million.
    - Architectural services--$425,000 to $565,000
    - Preservice training (trainee salaries)--$365,000
    - Operations analysis, preservice and job training design and implementation--$538,500

- Implementation management--$223,500 (evaluation plan; working with community organization; district, state, and federal liaison; staff acquisition management and review; curriculum design management and supervision).
- Community field work (including field office and support)--$140,000
- Faculty recruitment--$15,000
- Legal services--$25,000
- Economic and cost studies--$20,000

- Operation cost estimates:
  - Yearly total (12 months)--$2.6 million.
  - Cost per student (12 months)--$1,000
  - Yearly student jobs payroll--$908,000
  - Faculty salaries:
    - Total--$1.11 million.
    - Average--$15,000
  - Nonsalary operations costs--$582,000

Finances

- Financing daily operations:
  - Basic costs--provided by school district, from standard revenue sources.
  - Incremental costs where necessary (difference, if any, between school district support and estimated yearly cost per student of $1,000)--provided by:
    - Parents, when they can afford it, or--
    - Students, who borrow the required amount from a fund loaned to the community, and are not obligated to begin loan repayments until after their incomes exceed a preestablished minimum (e.g., the social security tax base of $9,000).
- Financing physical plant construction:
  - Basic concept--combined occupancy.

·Basic mechanism:

- ·Tax-exempt bonds finance school construction.
- ·Part of the school site is set aside for the creation of income-producing improvements, commercial or residential.
- ·Fees and taxes from these facilities are applied to bond debt service.

PROGRAM FEATURES

In this section, the design of the New School is delineated as a series of program features. Each feature is briefly described, then discussed in terms of its rationale and its relationship to other selected aspects of the design. The treatment is general and conceptual, leaving matters of detail and functional interrelationship to the subsequent section on operational specifications.

Structured and Open-ended Curriculum

The curriculum of the New School will actually be two curricula--a structured curriculum and an open-ended curriculum--operating in parallel, with complementary but different procedures, and separate means of support.

The structured curriculum will be carefully drawn and thoroughly articulated; it will be organized into discrete units, each with specified entry skills and achievement objectives; it will be administered through well rehearsed procedures on an individualized basis; and it will be evaluated by objective standards. In short, the structured curriculum will be a non-traditional but thoroughly formal approach to educational achievement.

By contrast, the open-ended curriculum will be broadly chartered, with a nearly unlimited potential for scope and direction; it will have an ad hoc organization and administration, depending almost entirely on the needs of the participants; it will be as individualistic or as collective as the activity demands; and the principal criterion for its evaluation will be the degree and extent of student motivation and participation, rather than standard academic achievement. In short, the open-ended curriculum will be an entirely informal and personal approach to intellectual growth.

We draw this contrast in order to stress the dual nature of the curriculum program; in operation there will be no attempt to reconcile the obvious differences between the two; each of the curricula will be separately maintained.

A portion of the New School staff will be directly responsible for the structured curriculum. They will have assistants whom they will train and supervise in administering the units of instruction. They will be provided with information (performance indices) by which to evaluate the adequacy of each unit. They will be expected to revise, improve, and augment the curriculum wherever they perceive the need. In all, they will maintain a program aimed primarily at formal, measurable educational achievement.

By contrast, a different portion of the staff will be directly responsible for the open-ended curriculum. They will have assistants who will work with them to lead, guide, and consult with groups or individual students in the pursuit of immediate and special interests. They will be provided with a portion of the school's material resources to be used for their own designs. They will be expected to create, nurture, and support circumstances which promote intellectual activity, and to change or discard those that do not. In all, they will maintain a program aimed primarily at broad intellectual stimulation and growth, which the student can adopt to his personal needs and interests.

Discussion

Over the past decade two discernable trends have emerged at the forefront of education--one emphasizing programmed or prescribed procedure, the other an open environment for learning. The distinction between these different approaches to learning is at least as old as the contrasting styles of the Lyceum and the Academy; contemporary manifestations are new only in the sense of applying the latest technology and reflecting current social needs. The structured approach emphasizes detailed preparation in depth (anticipating the student's needs), thoroughness of breadth (providing subject coverage for a broad range of future contingencies), and efficiency (minimizing the costs of instruction, both for the student and the teacher). The open-ended approach emphasizes motivation (meeting the student's personal needs), relevance (dealing with current intellectual interests), and serendipity (capitalizing on the instructional potential of immediate circumstance).

The relative merits of these two approaches are being widely debated today largely because a choice seems forced on the practitioner, for the different styles of teaching appear to be practically incompatible. Thus, the structured approach has been criticized for its tendency to become too conventional and authoritarian in content specification, and too mechanical in teaching procedure; the open-ended approach has been criticized for its tendency to become too diffuse and undisciplined in direction, and too dependent on teaching

skills that are not commonly available. These tendencies are no doubt real enough, but the difficulties, one suspects, have been magnified by virtue of having become the foci of evaluation in a forced choice situation: If both schools of thought could have their way, these "essential difficulties" might very well be viewed as merely "troublesome side-effects." We suggest that neither approach has inherently intractable problems, and that each, for its own reasons, should be incorporated into the curriculum.

Our aim, then, is to produce a curriculum that includes both structured and open-ended features. We believe that these different methods are practically compatible if each is supported independently, without attempting to force a principled or functional integration of the two. The practical reality is that open-ended and structured methods tend to "pull" in different directions. The open-ended curriculum will emphasize "free-ranging," "self-directed," and "inner-motivated" learning, in contrast to the structured curriculum's emphasis on "stated objectives," "explicit procedures," and "objective assessments." These different "pulls" are least likely to generate real conflict if they are maintained as separate and independent functions. Thus, even the most successful practitioners of open classroom methods must be concerned with preparing their students for the inevitable achievement tests. This concern, of course, is genuine and appropriate under typical institutional conditions, because the same person who is considering a free-ranging, self-directed, and inner-motivated approach is also charged with the responsibility for showing standard achievement test results. It takes great intellectual commitment and personal self-assurance for a teacher not to let these concerns encroach on open classroom methods, and this is a key source of potential operational conflict. Our organizational strategy of supporting the open-ended curriculum as an independent school function aims to minimize this potential conflict. With the existence of a complementary and parallel individualized instructional system, the open-ended mode is essentially relieved of achievement accountability. With the provision of support for both approaches, each can pursue its own special emphasis without distraction by the other.

The next two program features are explicitly concerned with evaluation and monitoring of student progress; these discussions are naturally couched in terms of the structured curriculum, since it represents the more formal and specified approach to educational achievement.

Learning to Preestablished Criteria

For each curriculum unit, there will be a preestablished criterion specifying the degree of comprehension that constitutes "mastery" of the unit's material. Criteria of mastery will vary with subject matter, but will generally be set at a high level of comprehension. Any time after a student begins work on a given unit, he may attempt the comprehension test; when he "reaches criterion," the unit will be recorded as completed, and he will be ready to undertake another. Failing to reach the criterion of mastery, he will not receive a mark of "fail;" instead, he will review the unit, take a corrective unit, or receive individual assistance. A student's record of progress will be simply a record of units mastered, and the record over all subjects will be a profile of unit mastery by content area. Some specified number of units will constitute the required minimum for each content area; beyond that point, the student may undertake additional units at his own option.

Discussion

"Learning to criterion" is an alternative to comparative norms--"marks," or "grades"--as a way of measuring progress.

Fair and effective progress evaluation is a problem even under the best of circumstances, and for poor students the problem is amplified. In most schools, the primary index of student progress is the course grade. A critical concern in judging the effect of such an index is how a "below average" evaluation is received by the student. If he interprets it personally (or ethnically), the intended effect is subverted, for to the degree that grades are interpreted (or issued) as labels rather than as indices of performance, the reaction of the

recipient will tend toward passivity or defensiveness, rather than toward sustained or redoubled effort.

A grade is a summary rating, by a single judge, of a given student relative to others in a particular course of study. All of these important qualifications are telescoped into a single mark that enters irrevocably into the record, and ultimately figures into an overall average. Practically every aspect of this practice violates one or more principles of measurement theory, but that is not the issue; our concern is with the way in which such ratings may affect the education of the student. The effects are not usually salutary. Most telling is the fact that, as a judgment by a single individual, the grade is open to various interpretations; it is patently susceptible to prejudice (in the broad sense of the term), both positive and negative--the so-called halo effect. The student must be a person with great self-esteem to accept a judgment that is (in fact) negative and (in principle) susceptible to prejudice as a legitimate indication of his own poor performance. To accommodate that judgment within his own self-image, he must agree either that his ability is limited, or his motivation inadequate. In either case, he is not likely to react by redoubling his efforts. Poor marks will have a positive effect, then, primarily on students who are high in self-esteem, and not prone to defeatism.

The use of grades as the primary index of performance, moreover, has consequences for the student that extend beyond the potential impact on his self-esteem and motivation. The grading system, because it depends upon comparative judgments of student competence, accounts in large measure for the tendency of the system to concentrate on the most talented students, since teachers are also subjected to comparisons, and can raise class averages by intensive effort with the few at the upper end of the achievement scale. It also encourages conservatism and timidity in the students' selection of courses, since they can increase their rewards more by membership in a "snap" course than by intellectual exploration or efforts to master difficult subjects. What is more damaging, it influences the structure of student-teacher relationships, subverting cooperation and severely limiting effective pedagogical partnerships.

If an entire class were to do well, the teacher, typically, would feel defensive about giving them all high marks, for the comparative standard demanded by the system virtually precludes the ideal of uniform excellence. Under these circumstances, a few student-teacher partnerships may be formed, but partnerships between the teacher and all his students are usually foreclosed. The relationships that ordinarily do emerge look more like those between adversaries in a constant-sum game--where there is competition for a fixed amount of reward. Since, with a comparative standard, only a certain proportion of each letter grade is available ("the curve"), a serious question of fairness arises when special consideration is given to any one of the class participants. It is tantamount to collusion to enter into partnership with the person controlling the distribution of rewards, or even the means of obtaining them. This undoubtedly accounts for the strong peer sanctions against a student's seeking extra help from the teacher. But if the reward structure is changed so that learning success is not achieved at the expense of anyone else, a barrier to the desired pedagogical partnership will have been removed. "Learning to criterion" should help to effect such a change.

Fine-grain Student Progress Monitoring

Courses of study will be broken down into self-contained units of varying length, with each unit made as short as possible, consistent with content presentation requirements. As part of the curriculum formulation process, special efforts will be made to identify the student entry skills that are presupposed by each unit's material, and its mode of content presentation. In many instances, these skills will be the explicit concern of other curriculum units that will thereby be identified as prerequisites. In other instances, the desired skills may not yet be embodied in a formal curriculum unit, but may simply be noted as possible prerequisites. The identification of prerequisite skills will not be a static, one-time effort; it will be the subject of continuous revision based on surveillance of student encounters with each curriculum unit.

Each curriculum unit will be handled individually by the student, with records maintained on his unit progress--i.e., check-out (start) date, "testing to criterion" attempts on the unit, and completion date. Every student's unit-in-progress file will be reviewed regularly, and with sufficient frequency to ensure that difficulties with any given unit will not be unduly prolonged. When difficulties are sensed, programs of diagnosis and correction will be called in. If difficulties are widespread, the unit will be reviewed and revised.

Discussion

A continuous-progress, nongraded curriculum must be carefully and closely monitored. One cannot reasonably assume that the student will always know when and why he needs assistance, particularly if his difficulty is the fault of the system for not having ensured his possession of the necessary unit entry skills.

At present, most schools operate on the assumption that children already have certain critical skills when they enter formal education. This assumption, especially for the very poor, is usually unwarranted. Often, the more blatant the discrepancy, the less likely that it will be identified without special effort. For example, a research team recently found that some young Mexican-American children in Los Angeles had not yet mastered some elementary relational vocabulary at the time they entered the schools. Yet, the setting instructions in the teaching process involved such words as "top" and "bottom," "first" and "last," "over" and "under." Therefore, many of the pupils were literally not getting their lessons.* This is, to be sure, one of the more dramatic examples, but similar findings have been revealed many times. There is growing awareness that the standard curriculum tacitly assumes that certain skills and vocabulary have been acquired (informally) outside the school.

This problem is not confined to a student's early years. Although some skills are developed with student maturation, the same difficulty often occurs again

*Ralph J. Melaragno and Gerald Newmark, A Pilot Study to Apply Evaluation-Revision Procedures in First-Grade Mexican-American Classrooms, TM-3930, System Development Corporation, Santa Monica, May 17, 1968.

because the same kinds of assumptions continue to be made. "Catch-up" programs, like Head Start, cannot completely solve this problem, because they are premature for skills related to later stages of development. "Catching up," then, becomes a continual process extending at least into the student's middle years, and often beyond. Accordingly, the need for identification and review of desirable curriculum unit entry skills extends to all levels in the school, and will be provided throughout the system as part of the fine-grain monitoring process.

Individual Student Rooms

With the exception of the very young, each student who so desires will be able to have a room of his own, and students who prefer to work with others will be able to work in larger study facilities, created by combining two or more single rooms. The individual rooms will be relatively small--economy will require that they be as small as possible without being confining--but each room will belong to a student occupant for the duration of his school tenure. They will be private, enclosed rooms that can be individually secured, and will be accessible to no one but the students to whom they are assigned, except in emergencies. They will contain the basic furnishings needed by the students; the degree and style of elaboration will be theirs to decide. Group study facilities, when chosen in preferance to individual rooms, will be available solely to their joint occupants, who will together decide on furniture arrangements and other living details.

Discussion

The provision of individual or small group study facilities supports the New School's curriculum design and operational mode, wherein students work at their own pace--alone, in teams, or with tutors--and are largely free to organize their time as they see fit. Moreover, quite apart from the special requirements suggested by the New School's design, the availability of individual rooms meets an important student need, for a great many students, and especially the poor,

find it difficult or impossible to secure the necessary quiet working space, outside of school, that is required for serious study. In fact, if all else were equal--and clearly it is not--then, on this score alone, the poor student could not compete with his more affluent counterpart.

Beyond the need for a convenient working space, there are more fundamental considerations: For a poverty-area student, the most difficult thing to achieve is privacy--the freedom to call some place in the world his own. While this is the foundation for an important value--respect for property--this value receives little experiential grounding in poverty areas. It can be provided, in part, at school. Nor are we concerned that students, poor or not, will "abuse" or "take advantage" of such facilities. Responsibility must be exercised to be learned.

Looking at the same general problem from another point of view, perhaps no building in the central city suffers more physical abuse than a school. Without condoning the abuse, one can at least see what might lead students to vandalize their own buildings. The plain fact is that nothing in those buildings (save perhaps a metal locker) is theirs. Abstract ownership is a difficult enough concept for those who have known ownership first hand, or have known it vicariously from those in close relation. To those who have never known it, the concept is surely empty.

In sum, this feature is designed to give the student a piece of the world that is his to use and improve; in a real, physical sense to make him part of the school; and to give him the privacy that the educational establishment often presumes, without reason, that he otherwise has.

Student Job Program

Every student will have an opportunity to hold a daily job alongside his academic program. The jobs will be varied in type, skills required, hours worked, and wages received. Within broad limits, all jobs will be open to all students, with placement a function of proficiency, maturity, past performance, and job availability. In brief, there will be a school work culture that is as nearly optimal as possible while still reflecting the work patterns that exist in the larger society. The work will be significant, the money will be real, the opportunities will be visible, and the job prerequisites will be realistically related to academic progress.

Since this feature is unusual, and might be misunderstood, three points of clarification need to be made. First, students will not be paid for "going to school"--i.e., for the business of progressing academically. They will be paid for work they perform while at school. The main prerequisite for getting a job will simply be school enrollment. In practice, the distinction between academic and other kinds of work will not be confused; the two are separate, though importantly related, activities.

Second, this will not be "make-work" for which the students get paid. It will be, in fact, the business of operating the school. Schools are, in important ways, micro-communities which mirror many of society's functions--transportation, food services, building and maintenance, supply, clerical work, administration, training, equipment repair, and purchasing, not to mention child care and teaching. These are jobs that must be done if the school is to operate. They are normally assigned to hired ("classified") employees; in this case almost all of the employees will be students.

Third, the emphasis is on opportunity for employment, not on vocational training. If, for example, an academically talented student wants to work in equipment repair, he can. It is the fact of his employment that is of primary importance. If, at the same time, he learns a skill that will benefit him in later life, all the better; but he need not make a work-career decision when he applies for "work at school."

Discussion

"Work at school" has three primary rationales. First, it will provide the student with money. For a poor family, the real costs of public education can be substantial and inhibiting. In low-income area schools, attendance often drops noticeably on days when "charitable" collections are going to be made; "wages foregone" account in part for dropouts among students from first-generation Spanish speaking American families (with their strong tradition of having all able members contributing to the family income); and there are many other known instances in which the lack of money is in some measure responsible for absenteeism or for total withdrawal from education.

Second, work at school, being serious work, will be meaningfully related to academic progress. A student who comes from a second-generation relief family may have understandable difficulty seeing the relevance of general math for the perceived prospects in his life three or six years in the future, but this relationship could be established quickly if an opening for a fourth-shift carpenter's apprentice carried a prerequisite of three units of general math. This is not to say that every academic course will be relevant to a specific job at school (nor, for that matter, to a specific job in the community at large); it is to say only that the general relationship will be recognizable and concrete.

Third, the student job program will provide first-hand experience in a productive society. Other educational programs have employed different means of exposure and enrichment--simulation games, intensified field trips, interaction with business community representatives, etc.--but these fall short because they are too abstract, too spasmodic, or too foreign to personal experience to have the desired impact on the student. The student who is immersed in a work community within the bounds of his own society will quickly learn the informal patterns that are the grounding for responsible behavior in a productive culture.

Student Academic Career Controls

Broadly defined, a student's "career" at school refers to his direction and rate of progress in academic and job areas. Within limits, each student will control his own career decisions. He will choose the path of his academic program through the selection of the curriculum units that he is qualified to undertake. He will also control his rate of progress, since curriculum mastery will be individually paced. He will choose the path of his work program through the selection of jobs for which he qualifies himself.

At any given point in a student's career, all future academic and job options will be open to him. The structure of his career possibilities will be a network of academic units encompassing kindergarten through twelfth grade. There will be not just two or three possible paths, but literally thousands, to be determined by the branching of individual choices. The structure will be completed by an accompanying network of student job positions, with comparable paths also determined by individual choice. The two networks will intersect where jobs carry academic prerequisites.

Discussion

The merits of a continuous-progress, nongraded curriculum are usually related to strictly pedagogical aims. The pedagogical advantages are important in the New School, but so also is the opportunity for student choice and control, as a way of offering practical and realistic experience in decision-making, and nurturing habits of self-reliance and self-direction.

The development of decision-making skills needs to be given special attention in poverty areas, because while poor children may have definite career ambitions, they often lack adequate examples of the appropriate procedures for achieving their goals. They can hardly be expected to emulate the career choices of their preferred adult models without experiencing at close hand the processes for doing so.

In providing the ability to make career choices, we naturally increase the possibility of student error. Counseling is a means of preventing many of these errors, and a good counseling program will be established; but no such program is infallible, and any counseling that preempted the student's sense of control would be self-defeating. At least as important as the provision for guidance is the need to allow for possible misdirection, and to provide for correction with the minimum possible penalty. A visible, small-step, continuous curriculum and job structure will keep the costs of student error acceptably low. In the schools at present, there is an understandable premium on avoiding mistakes because the penalties are so high; our goal is to open up student choices, and at the same time reduce the cost of misjudgments or shifts in career aspirations.

Poor students, in particular, are typically more liable to fluctations in career objectives, and will therefore benefit most from flexible academic programming. The tendency of poor students toward greater fluctuation is often related to an absence of strong parental control over career goals; poor families are concerned with general achievement, but usually lack the academic "know-how" for translating aspirations for their children into academic specifics. For the poor student, this is a mixed blessing: On the one hand, he does not have choices being made for him against his own desires; on the other hand, the lack of direction may be disabling. This condition does not fit well with the traditional academic structure. The typical two-track or three-track career preparation forces early decisions which, once made, are nearly irreversible--at least not "upwards." Under the traditional system, a student in his mid-eleventh year of school who decides that he would like to try for college after all, would have to retrace his steps, at least to the beginning tenth year, begin on a different track, and, most importantly, face several more years of school before he could complete the necessary requirements.

The best way to accommodate shifts in student aspirations is to provide a curriculum organization that is responsive to changes in choice of program content and pace of individual effort. Since one of this school's primary

goals is the nurture of strong academic and career motivation, particular care is taken to provide a structure and environment that do not militate against student exploration and change of direction.

Improved Professional Rewards

The New School faculty will be regarded as full professionals. They will be expected to assume heavy professional responsibilities, and they will, accordingly, be offered appropriate professional rewards. Salaries will be raised to levels comparable to those of experienced university teachers. This is possible because many of the tasks now performed by teachers and teacher-administrators will be reassigned to students. Working conditions will also reflect professional status, with provisions for physical privacy, secretarial and clerical support, and explicit time for work-related reading, study, and education.

Discussion

The improvement of professional rewards, in general highly desirable, will be especially important for the staffing of a poverty-area school, where a teacher has responsibilities that are more demanding than those of his colleagues in more affluent neighborhoods. First, if he is to do a good job, he must work harder and be more competent than most other teachers, because the demands on his skills and time will be greater. Second, as a professional, he is a representative of the intellectual community, and perhaps the most persistent contact with that community that many of his students will have for at least twelve years of their lives. If they in turn are to value intellectual pursuits, it will be in no small measure because he presents a positive image of such endeavors. Third, he is (most likely) a person from "the other" culture: a middle-class world far from the direct experience of poor children; a world held up to them as one of affluence, security, and stability--but also a world to be feared and avoided, a world to be fought and subdued, a world somehow responsible for and

indifferent to their own poverty. In these vague and conflicting assumptions lie many of the roots of social alienation and despair. The professional, who represents this other world--and does so from a position of authority and prestige--bears a special responsibility for maintaining the strictest standards of honesty, fairness, and compassion. Given these conditions, the personal role of the poverty-area teacher is at least as important as his formal role. It is essential that he be of the highest personal and professional caliber--a competent, sensitive, and exciting person.

The ability to attract such people may depend in part on the provision of excellent salaries, but the best teachers will not be attracted by salary alone. Just as every student in the school may have his own room, every professional will have his own office, with full secretarial and material support. The precise details are less important here than the concept; he should be treated as a master of teaching or as an executive of curriculum. These perquisites are important attractions for filling the job, but they are no less important for what they will convey to the students. Why should any student value intellectual pursuits when he sees a man with five years of college who has no privacy for contemplation, with wages that invite moonlighting (often at a semi-skilled job), with a workload that preempts self-improvement, and with a status that is the lowest rung in the educational hierarchy (save possibly students themselves)? Our objective is the creation of a position that will command both student and outside professional respect--one that will attract the best men and women available.

Differentiated Professional Tasks

The New School has three functional areas: the student job program, the study program, and the progress evaluation program. Professional staffing patterns will adhere to these broad dimensions of the overall design. One group, the practical professionals, will be concerned primarily with job skills training, and with supervision of related student work. Another group, the curriculum

professionals, will be concerned primarily with curriculum materials, procedures, and teaching. The third group, the evaluation professionals, will be concerned primarily with curriculum testing, progress monitoring, guidance, and evaluation. In each area, professionals will be considered independent experts, and will have major executive responsibilities. Accordingly, there will not be any differentiation of faculty salaries by task area or specialization.

Discussion

Rather than one person acting as part-time teacher, part-time evaluator, and part-time counselor to a roomful of students, one kind of professional will be full-time pedagogue, another a full-time evaluator and counselor, and another a full-time trainer and work supervisor. In terms of status and intellectual values, it is particularly important that the latter group convey a positive image. They would not be just practical-arts teachers, because they must be work supervisors; they would not be just administrators of operations and maintenance, because they must also formulate training programs. These positions would, in many respects, be the most demanding among all the professionals' roles.

The differentiation of professional tasks will not result in the "freezing" of faculty assignments. Faculty members will be encouraged, as planning limitations allow, to move horizontally in the system--to take on whatever tasks their interests dictate and their skills permit. It is the explicit separation of functions that is of primary importance, rather than the permanent identification of a particular faculty member with any given function. Although requirements for continuity and consistency in job performance will naturally place some limitations on horizontal mobility, an "open" system should help to sensitize faculty members to the problems and requirements of their colleagues in different functional areas, and should support the essential processes of coordination and information sharing.

The differentiation of professional responsibilities will provide a number of desirable reforms. The most obvious benefits are clearly a more efficient division of labor and the maximization of professional competence. In addition, faculty accountability will be increased, effective program planning and

continuity should be easier to obtain, and the educational impacts of personality problems, substandard professional performance, or faculty absence would be minimized. Finally, because teaching and evaluation functions will be vested in different members of the faculty, a structure of student-faculty cooperation can be encouraged without risk of fostering accusations of "unfair competition" or "undue favoritism."

System Adaptability

The structured curriculum will be subject to constant review, using quantitative indices of evaluation. After a number of students have encountered a given curriculum unit, records of their performance will be reported to the responsible professional. These records will show the average time required to achieve subject mastery as defined by preestablished criteria, frequencies of success, the number of students who were branched to corrective units, and their subsequent success with the original curriculum materials. The records will help the professional to determine whether the unit is adequate and, if it is not, where the basic weakness lies--whether it is too long, whether there are hidden presuppositions in the material, whether it is mislocated in the curriculum network, etc. It would then be his responsibility to modify the unit, substitute another, revise its place in the network, or create a new unit altogether, in order to rectify the inadequacy.

Similar improvement procedures will be applied to training units in the student job program, with job performance, determined from work history records, as the principal criterion of training unit adequacy. The material from training units, as from curriculum units, will have to be adequately assimilated, and will also have to relate positively to on-the-job performance. If a given training unit is pedagogically unsound or at variance with desired performance, it will be the business of the responsible practical professional to rectify the inadequacy.

The open-ended curriculum will be reviewed and evaluated as well, but only on its own terms. The goals of this curriculum are intellectual stimulation and motivation. These objectives are not assessable in terms of academic "achievement," but some indices of progress and performance are available. Thus, at the very least, a stimulating program should be well attended (attendance is a viable measure if it is voluntary or optional), and a motivating program should produce new directions of exploration (increased enrollment or project activity are reasonable measures when they are not mandatory). Attendance and activity level measures will be available in the system. While they will not be the only measures of success (faculty and student evaluation would certainly be pertinent), they should provide useful warnings of potential weaknesses in the program.

An attempt will also be made to assess the performance of the educational system viewed as a totality; to identify areas of concern, and to fix the responsibility for implementing improvements. Four groups will participate in this assessment: the students, the staff, the community, and the system managers. Involvement will be differentiated to reflect differing perspectives and concerns. In the main, students should indicate the problems they perceive as participants immersed in the system; staff should be concerned with substantive problems and administrative support; members of the community should express their views, positive and negative, as clients of the system; and the system managers should reflect their concern for resource allocation, community and school district support, and the interrelation of components within the total enterprise. In terms of procedure, this should not be a loosely structured "discussion" committee. If workable programs are to emerge, it will require at least the formality of having recommendations and reports in writing, with participants responsible for disseminating information to their representative groups.

Discussion

This design feature addresses three major concerns: minimizing the effects of system errors, protecting the student against unduly severe penalties resulting from his own mistakes, and supporting constructive system change.

With regard to system errors, the ideal system would eliminate all structural impedance to the student's progress. As an approach to this ideal, our design does provide fine-grain monitoring of each student in all aspects of the program. If he is not progressing according to expectations, rectification will be predicated on the assumption that the system is in error--that it has been mistaken about his entry skills, that the expectations are unwarranted, that the material has been badly presented, that the unit has been mislocated in the curriculum network, etc. Furthermore, there will be information resident in the system (or procedures for gathering the information) to help determine which of these alternatives the system should act upon, and to help specify the personnel responsible for rectification. Ideally, the student would never experience problems because of design inadequacies or practitioner misjudgment. Realistically, these are unavoidable, but subject to correction if made identifiable and charged to definite areas of faculty responsibility.

With regard to the student's own errors, the goal will be, not to eliminate them, but to guard against their prolongation. Mistakes will not be encouraged, but neither should there be the expectation that they can, or even should be, wholly eliminated. If a central goal of the school is to induce a sense of competence, self-direction, and aspiration, then tolerance for error must be a recognized part of the process. Too often the effect of "guidance" is to determine the student's niche by pigeon-holing him. Our aim is simply to help the student rectify and learn from his own mistakes. Professional personnel concerned with progress evaluation will be responsible for monitoring the students' histories, and for encouraging them to explore new areas. This objective is supported by a structure that imposes no prospect of permanent penalty for a student's failure to succeed immediately in a new intellectual venture.

Total system performance will be the most difficult to assess, because criteria are less clear-cut. A fundamental criterion will be simply whether the design functions without breaking down--i.e., in gross terms, whether the school actually works. If it does, that will itself be one important measure of

success, since it will necessarily imply that students are not standing still in the curriculum, that they are learning skills of self-direction, and that interaction with the community can be created and maintained.

Another criterion, highly subjective and informal, but no less important, will be participant satisfaction levels. If students, faculty, community, and system managers are generally pleased with performance, procedures, and possibilities for the future, their cooperation in providing continuing commitment and improvement can probably be counted on. The design of the New School provides many opportunities for such improvement. Built-in processes of curriculum review, wide latitude for student self-direction, a large measure of professional autonomy combined with faculty accountability, substantial community prerogatives, and a flexible physical plant and operations management plan combine to guarantee a number of possibilities for constructive system change. If formal and informal assessments of the need for change are in turn supported by cooperative implementation efforts on the part of all concerned, the New School's potential for adaptability will be realized. If this spirit of commitment and cooperation cannot be created, no structure, no matter how ingenious, and no formal evaluation procedure, no matter how rigorous, will succeed in guaranteeing the desired system flexibility. On paper, such a spirit of cooperation is an abstraction; in the school, it can mean the subtle difference between "getting along" and "succeeding."

Functionally Unified School

The New School will be functionally unified, preschool through grade 12. Functional unification needs to be distinguished from school district unification, which is something quite different. At the school district level, unification ordinarily brings certain economic efficiency advantages (a broader tax base, bulk purchasing economies, more diversified services, etc.) and also provides a basis for coordination and continuity in the educational program by placing all levels of education under one administration. This latter advantage--coordination and continuity--requires closer examination.

The typical intradistrict organization follows the traditional division into primary, intermediate, and secondary levels, with physically separate facilities and separate building administrations. The result is a substantial degree of administrative separation even within a unified district. Elementary, intermediate, and secondary schools are often governed by different regulations; the staffs may have different salary schedules; the professional training and certification requirements are sometimes different; the curricula are usually organized differently; etc. The practical basis for continuity and coordination is ordinarily lost in the intradistrict organization; the unity is more formal and fiscal than it is functional.

The most direct means of achieving functional unity is to conceive of the school, preschool through grade 12, as a single entity--administratively, pedagogically, and physically. Rather than having a hierarchy of schools operating at different grade levels, this suggests that each school operate at all levels. Such an organization is in no way inconsistent with the economic advantages of district unification.

Discussion

The most obvious advantage of functional unification is that it provides a realistic basis for continuity and coordination in the total educational program. Professional educators have long been concerned with the problem of articulation--the transition between formal steps in a student's program--not only from one grade to the next, but also from one school level to the next. Despite concerted efforts to deal with this problem, it tends to persist, because physical and administrative separation interfere with even the best plans for coordination. Where this separation can be eliminated, the chances for coordination will be enhanced. They can be further enhanced by placing responsibility for the entire academic program in a given subject area with a single person or department. If the total math program, for instance, is one group's responsibility (both for conception and implementation), the problem of articulation can be largely resolved.

Another advantage of placing preschool through grade 12 under "one roof" is better facility utilization. With the traditional three-level organization, there are practically no laboratory science programs before the secondary level; yet many educators would argue that younger children could benefit a great deal from the kinds of demonstrations that require laboratory facilities. In fact, many elementary school students could profit greatly from most of the facilities that are usually reserved for the high school campus. At the same time, high school facilities are rarely utilized to maximum capacity. Time is often available for their use by younger children, but programs requiring their utilization are usually not worth the effort and expense of intercampus transportation.

For poor students, there are three other special advantages to a functionally unified school. First, there is the problem of educational and social stability. Counting preschool, every student faces the prospect of changing schools at least three times in his educational career. Each time, he encounters a new set of procedures, a new group of teachers, a new administration, a different peer population, and possibly some significant gap in his records. This is a potentially damaging and unnecessary source of instability, especially for students who already have more than their share. The second advantage relates to the community. Though community involvement and participation may be desired, it can only be discouraged by the traditional, hierarchical school organization. The "community school" is too often an abstraction, divorced from the reality that many poor families have children at all three levels of education at one time. This means "participation" in three schools, and perhaps a preschool group. The third advantage relates particularly to younger children; it is known that they benefit from contact with older students. A single school for all ages provides that opportunity, and a school with job programs and a design for individualized progress will increase the occasions of formal and informal contact.

The functionally unified school, then, should provide a more workable basis for curriculum continuity, more adequate facilities for subsecondary programs, greater social and educational stability for the student, a more natural

community-school relationship, and a greater opportunity for beneficial contacts between students of different ages. In no respect are these advantages at variance with the benefits of school district unification in the traditional sense.

Extended School Operations

The New School will extend both the services it offers and the hours of its operation beyond customary present limits. It will be open 15 hours a day; will conduct normal operations on an eight-to-eight schedule, five days a week; will be accessible for recreation and private study on weekends; and will extend the school year to a full 12 months. Additional services will include child care, community recreation and participation in regular cultural and educational programs, comprehensive student health care, and adult education programs for the benefit of alumni and the community.

Discussion

With the school open on a 15-hour basis, the student can take full advantage of his private room, which will be available to him from early morning to late at night. There will also be greater flexibility for integrating student job and study schedules. Some jobs must be scheduled during the normal business hours, but others can be done before eight and after five.

The extended hours of open school will also benefit the community. First, there will be supervision for younger students before and after the business day. For working mothers, this will be a source of relief from some child-care problems. Second, the extended hours will encourage the use of the school for community activities. Since the openness of the school will be a matter of course, it will not require complicated administrative arrangements to take advantage of the school as a community facility. Third, it will allow and encourage the student to lead his parents back into the educational process.

Extending the school year to a full 12 months is particularly important in poverty areas, where the incidence of disease is higher, and where there is less job security in the family and less control over personal-family-social patterns (less access to transportation, less choice of vacation periods, etc). The poor student, who is more susceptible to the vicissitudes of life, is in turn more prone to (legitimate) absenteeism. With the school in session 12 months a year, this proneness to absenteeism (over which the school has little control) will be less penalizing to the student; the criterion for a year's schooling can be set in terms of days actually in attendance, rather than in terms of a fluctuating proportion of potential attendance. Students who want to exceed the legal yearly attendance requirement could either foreshorten their 12-year obligation or take advantage of an uninterrupted opportunity for educational progress.

Community Participation

The concept of "community" has been used to denote associations of common interest varying in scope from whole peoples and cultures to discrete urban neighborhoods. We employ it here to describe only those people whose common interest is the New School and its activities. For the most part, the school community will consist of parents whose children are students at the school. It will also include other adults whose interest in education in general, and in the New School in particular, is part of their general active participation in civic affairs. Strictly speaking, this definition of community excludes students and salaried public servants (teachers, managers), whose relationships to the school are necessarily more formal, more regular, and more highly defined, and are therefore best treated separately. Nevertheless, we assume that common interests and concerns will often bring students, public servants and community together in close working relationships. Our approach to the design for community participation reflects this assumption. The treatment of community primarily in terms of an identity of interests, without any special requirement for residential proximity, is deliberate: The school may draw students from many parts of its

host district, so that residents of the school's proximate urban neighborhood may make up only one part of a larger and more dispersed school community.

As school development and design implementation proceed, a number of design features will require substantial elaboration. Curriculum, physical facilities planning, and governance procedures, in particular, are areas where much hard work lies ahead, and where the contributions of parents, other concerned citizens, students, and teachers can be of particular importance. The community will therefore be invited to participate in the final planning of school programs and operations, and to begin its participation at the earliest feasible date. During school operations, members of the community will be encouraged to contribute their own skills to educational programs, and to participate in both student counseling and staff training activities. In addition, the community will be asked to bear important responsibilities for the organization of nonacademic extracurricular activities and for school plant assessment and maintenance. The community will also be invited to participate in the school staff selection process and in the continuous review and development of school programs and curriculum. Faculty and students will be asked to join the community in its efforts to solve outstanding social and economic problems, and community representatives will be guaranteed full, regular access to all levels of school administration. Finally, the community will be encouraged to establish regular information dissemination procedures, and will be offered the use of school facilities for this purpose.

Discussion

We would like to eliminate traditional barriers to a close, cooperative school-community relationship, and create a structure of support and encouragement for joint participation in the full range of school-community activities. We would emphasize two complementary principles: the school's accountability to the community, and the community's responsibility to the school.

These principles can be discussed separately on paper, but in practice they should not be distinguishable. Together they define the preferred mode of school-community interaction. An exclusive emphasis on community rights, for example, ignoring community responsibilities, would be symptomatic of the very problem that has in fact been responsible for much community militancy: the treatment of communities as adversaries rather than as resources. The community-as-adversary is "conceded" certain rights and privileges, although rights granted with reluctance often serve only as testimony to a continued absence of confidence in community competence and good will. Proprietary attitudes which treat community rights as privileges to be granted by their "owners" (the school administrations), rather than as natural entitlements awaiting their proper claimants, merely reinforce understandable feelings of outrage and hostility on the part of parents, students, and other members of the community. Thus, even after all the rights demanded by a community have been "won," school-community relationships often remain sour and unworkable.

The community-as-resource, on the other hand, implies the sharing of both rights and responsibilities that are, properly, of mutual concern to both the school and the community. It is this latter spirit that will define school-community interaction in the New School.

Although the argument for community-as-resource could perhaps be made on grounds of economy and efficiency (consider the dwindling and inadequate resources of many urban schools), and though there are obvious and compelling moral arguments as well, the educational benefits alone justify such a posture on the part of school planners. It now is almost a cliché to assert that the process of education is not, and can never be, restricted to activities that take place in schools between the hours of eight and four. Nor will extensions of the school day and school year, though helpful, change this fact. Children need the active support and demonstrated interest of the adult community--not just professionals who get paid to help, but others as well--parents, friends, community "personalities." In turn, the community, if it participates fully in school

affairs, can help provide important encouragement and reinforcement for its children--and could thereby make the school's job easier. The community is, of course, a legitimate place for the education of children--a place where, as we know, children learn a great deal about the real world. What they learn, and how they learn it, is something the community can substantially influence, with the assistance of school faculty and students themselves. The abdication of this mutual responsibility has long had tragic consequences in the "street miseducation" of countless children, not only in poverty areas, but in more affluent neighborhoods as well.

School accountability to the community follows naturally from the assumption that the school is responsible first to those whose lives are most directly affected by its policies and programs--its students, and through them, their parents. Parents and students are the school's clients; their rights--to a full account of services rendered, to participation in decisions affecting their lives, to regular access to school administrators--cannot morally be abridged without risking destruction of the consensus required for decent and constructive social relationships, and cannot practically be eroded without severe risk to the success of the educational program.

Community responsibility to the school follows in turn from the assumption that parents (and other concerned citizens) are responsible for the welfare of their children and their community, and it is therefore their duty to assist those institutions upon which they rely for critical support in meeting these obligations. They cannot morally refuse their help and participation to the school without eroding their just claims to school accountability, and they cannot practically refuse without endangering the success of the educational enterprise and damaging the interests of their own children.

OPERATIONAL SPECIFICATIONS

Up to this point we have a "program" in name only, since the various program features have been considered almost independently of one another. The purpose of this section is to specify a set of operations that will serve to interrelate these separate features, and translate them from relatively abstract designs into more concrete plans.

In order to develop an integrated operational outline, it is necessary to deal with substantive details. Quite often, this procedure requires a high degree of specificity, one that anticipates data that cannot practically be obtained with accuracy and validity until later stages of project development. Under these circumstances, there is no satisfactory alternative but to make a first approximation of the important parameter values; even with an assumed degree of error, "best guess" first approximations are useful (providing, of course, that they are not grossly inaccurate), since it is the relationship between parameters, rather than their specific values, that is of primary importance.

STUDENT BODY

Size of the Student Population

The size of the student body is a "setting condition" for many aspects of operational planning, and its specification should represent a reasonable compromise between the demands of economic practicality (which point toward greater size) and concerns for coordination and management (which imply lesser size). The New School is planned for 2,600 students--an average of 200 students per grade, kindergarten through twelfth grade.

The primary considerations in determining a best size for the school are the following:

- Student job program. The numerous job responsibilities, especially at the upper levels, require a suitably large student population from which to draw job applicants. Any number much less than 200 per grade would not be sufficient to cover all work functions adequately.

- Differentiated staffing. Differentiated teaching functions require a minimum faculty (academic and practical staff) of approximately 80 professionals, for the desired specialization in a differentiated design requires a certain minimal staffing level, regardless of student body size. We should therefore plan for a student body that is large enough to ensure the provision of adequate financial support for the required staff, but not so large as to overtax staff resources or force a change in staffing levels, with associated effects on related planning factors (direct costs, administrative support, physical plant, etc). A student body size of 2,600 establishes a workable overall ratio of approximately 30 students for each member of the professional staff.

- Functional unification. Since one of the explicit aims of having kindergarten through twelfth grade in one physical location is that of providing the younger student with an expanded range of physical facilities, any number significantly less than 200 per grade would diminish the utility of the facilities provided.

- Physical plant. Considering the requirement for individual student rooms, building site requirements are almost directly proportional to the size of the student population (more so, at least, than with conventional school housing). Too large a student population would impose unrealistic site demands.

- Community interaction. It is assumed that the primary community (the parents of students) will be approximately equal in size to the student body (i.e., an average of two school-age children for each two parents); the recommended size of 2,600 is probably near the upper limit for effective interaction.

Distribution of the Student Population

In order to facilitate operational planning for curriculum and student job programs, the distribution of student population across age levels must also be considered. The most workable assumption is that students would be distributed evenly across the levels which serve to organize the curriculum and job programs of the school. This assumption is made as a first approximation for planning; it is not a rigid requirement for actual operations, since there is latitude in the design for sizable fluctuations in distribution, both within and between these levels.

The "optimum" distribution of the student population is summarized in Table 1. It is difficult to present a summary of this kind without partially misleading the reader; particularly it should be noted that even as a first step in planning, it is not necessary to assume a one-to-one correspondence between age levels, curriculum levels, and work levels; it is only necessary to assume that there are, for example, 200 students of age 7, that there are 200 students within the third curriculum level, and that there are 200 students holding jobs at work level I-3. Presumably there will be a sizable overlap among these distributions, but complete coincidence is neither assumed nor required.

	Related to traditional grade and age levels		Related to New School levels	
Number	Grade	Age	Curriculum level	Work level
200	K	5	1.00	I-1
200	1	6	2.00	I-2
200	2	7	3.00	I-3
200	3	8	4.00	II-1
200	4	9	5.00	II-2
200	5	10	6.00	II-3
200	6	11	7.00	II-4
200	7	12	8.00	II-5
200	8	13	9.00	II-6
200	9	14	10.00	II-7
200	10	15	11.00	II-8
200	11	16	12.00	III-1
200	12	17	13.00	III-2
total. . .	2600			

Table 1. Distribution of Student Population

Other Student Population Characteristics

We would prefer a student population in the New School that is completely heterogeneous with respect to ethnic background, socioeconomic status, and ability. At the same time, our special concern for the education of the urban poor could have the practical effect of pulling in the opposite direction--toward a more homogeneous student population. If, for example, the New School were to be established in a segregated poverty area, its "natural" clientele would be unlikely to include many white, middle-class families. Moreover, should the school become a magnet to some more affluent families, as we anticipate it will, poor parents might well argue that while a heterogeneous student population is not without value, every white middle-class student who enrolls in the

school displaces one potential enrollee who is poor and black--for whom the school, whatever its student makeup, would represent a badly needed improvement over available alternative public education. Thus, the endorsement of an important educational and social value--heterogeneity of student population--may lead to a value conflict of a different kind: the potential displacement of some students with great need by those with a lesser one.

It is difficult to predict the extent to which this potential value conflict will become a serious problem; a great deal will depend on the demographic character of the New School's host district and immediate neighborhood. It is clear, however, that there may be instances where wholly satisfactory solutions to such a dilemma will not be found in the short run. Should hard choices thereby become necessary, we believe they should be made early, and should be based on well-understood principles. We would offer the following tentative guidelines:

1) Admission to the school should be wholly voluntary. Assigned attendance would be undesirable and impractical, given the nature of the school's design.

2) No student should summarily be denied admission to the school. This policy should apply not only to ethnic or socioeconomic criteria, but to student ability as well. (Only severe mental or physical handicap should be a legitimate reason for exclusion, and then the essential criterion should be whether the student could reasonably benefit from the New School experience. In other words, the school should be open to so-called special education students, though it would not have, by design, any special education classes or programs.)

3) The principle of student body heterogeneity is sufficiently important to warrant consideration of policies designed to ensure that outcome. In the immediate sense, it is educationally important: Not only is there ample evidence regarding the positive impact on educational achievement of ethnic and social class integration; the New School is particularly concerned with the broader meaning of education as preparation for effective functioning within the larger society, and a heterogeneous student body will provide students with a more realistic experiential grounding for their post-graduate lives. In addition, there is the larger issue of the New School's role as one model for the reform of urban education. We are not proposing programmatic reforms within the context of an existing (possibly segregated) school, but the construction of an

entirely new plant and educational design. Given the opportunities suggested by the ability to start de novo, and the presumed function of the school as an example worthy of replication, a homogeneous student population would seem particularly inappropriate.

4) As a point of departure, the referent population for a definition of "heterogeneity" should be the school-age population of the New School's host district. That is, the student population of the New School should roughly reflect, in terms of ethnicity, socioeconomic status and ability, the character of the district's entire school population. This is not offered as a rigid definition; there may be instances in which some different criterion would be more appropriate.

5) If the policy of voluntary ("first-come, first-served") admissions does not by itself yield a heterogeneous student population, some restriction on this policy would be in order. Whatever restrictions seem most suitable, all those who would be affected by them should be consulted, and resulting policy should be a district level decision. If particular kinds of students are desired as enrollees, but have not been forthcoming under the policy of voluntary enrollment, we suggest that places be held open for them until it is clear that their enrollment cannot be obtained; at that time, those slots should be allowed to revert to any student who does wish to enroll, regardless of his ethnic, socioeconomic, or ability characteristics, and without regard to the consequences for desired student body heterogeneity.

The Strategy of Pervasive Change

While the recommended size and distribution of the student population can be rationalized in terms of design considerations, the strategy of involving all grade levels at once is so obviously at variance with the usual education practice that it often causes some concern. The usual strategy of change is consciously incremental, beginning with a subset of the whole (a class or grade level) and progressively extending the change on a yearly or semi-yearly basis until it eventually encompasses the entire system. The primary rationale for this strategy has a great deal of face validity--it seems reasonable that students most amenable to change would be those with little or no previous experience. It is the implied, but rarely stated, converse of this proposition that requires scrutiny: that older, more experienced students are not amenable to change. If that were true, the major transitions in academic life (elementary

to intermediate to secondary to higher education or work) would reach overwhelming proportions. They do not, because students anticipate these changes and soon recognize that the new situation holds different expectations of them. This awareness, replacing the dogged persistence of old habits, is the key to adjustment. Thus, a new classroom technique can actually be more difficult to adjust to than a change in school. In short, we question the validity of the assumption that a student's experience with traditional schooling practically precludes him from educational reform.

The question of student adaptability aside, however, the strategy of incremental change would still be advocated by most educators simply because it fits their preferred low-risk, conservative style of management. Pervasive change is admittedly high-risk and more visible, since negative results cannot be absorbed by the greater mass of standard practice. Conservative management naturally prefers to limit and circumscribe areas of risk, looking for substantial guarantees of success as a precondition to the enlargement or extension of new programs. This strategy seems eminently reasonable, but it obscures an important factor in the high-risk/low-risk decision equation: The prospective costs of failure in a high-risk program may be greater, but the prospective benefits of success are also increased. This latter possibility is of particular importance, because a limited, circumscribed program would have to produce sizable educational benefits (not just a "positive" or "statistically significant" difference) before it could serve as a practical basis for pervasive change. Educational gains are largely interactive (which penalizes the low-risk strategy of circumscription), but even if they were simply additive, no one program is likely to achieve the level of success that is typically required as the precondition for its enlargement or extension. In sum, we question the efficacy of a low-risk, conservative strategy for the New School, and we submit that a comparatively high-risk strategy of pervasive change has potentially unique practical benefits which justify it as the preferred mode of effecting reform.

Of course, an argument for pervasive change will not minimize the problems of introducing new programs to older students, nor will it diminish the consequences of potential failure in a high-risk strategy, and we must take steps to cope with both of these contingencies. The acclimatizing of students should be somewhat eased by the probability that a voluntary enrollment policy will produce students who are at least moderately well disposed, and receptive to new modes of activity. In addition, a student training program will be held for a month prior to the opening of school; this program will offer general orientation, walk-through experience, and on-the-job training. In a variety of other ways--planning, policy-making, program definition, plant design review, etc.--students will be intimately involved in the development of the New School. Finally, the New School in operation is designed to sense and respond to maladaptive behaviors before they become too penalizing to the student.

In considering the consequences of potential failure, we must, realistically, plan for a radical change in operations if the design proves to be unworkable. Some losses would not be recoverable, but wherever possible, appropriate contingency plans have been incorporated into the design. The physical plant, for example, is designed for conversion to a traditional program without excessive losses; staffing policies include provisos to insure career continuity for the faculty; the structured curriculum development has intrinsic merit aside from its use in the present design; and accreditation of student progress will be secured against the eventuality of their returning to a traditional institution. In general, we fully expect to succeed, but we would be doing all concerned a disservice not to consider the alternative in our plans.

PHYSICAL PLANT

Importance

Physical plant design, at its best, should reflect and support the educational program. This axiom of school house planning has special implications for the New School. Ordinarily, new models of education entail new educational functions, which in turn imply a requirement for different kinds of physical facilities. For obvious practical reasons, this principled approach is usually not followed in practice. For the sake of expediency, most new models are forced-fit into existing facilities, often with unfortunate results. The consequences of a mismatch between facilities and functions are not confined to matters of inconvenience or inefficiency; there is the more fundamental problem that behavior tends to be limited or reinforced by physical conditions. It is difficult to maintain a desired change in practice when the surroundings are more conducive to other, typically more familiar, modes of behavior. In this way, many new programs can be subtly undermined by having to use improper facilities. It is fundamentally important, then, for the development of any innovative new school, to plan for appropriate physical facilities; this importance is amplified with models, like ours, that propose to implement extensive functional changes.

Purpose

Preliminary architectural studies for the New School have been developed to satisfy three requirements of operational planning:

1) Establishment of school design feasibility. The requirement for providing individual student rooms poses a special question of practical feasibility, which cannot be satisfactorily resolved without providing a sample solution.

2) Provision of a basis for initial estimates of costs and schedules relating to design and construction.

3) Determination of parameter values related to logistics and operations evaluation. The quantitative aspects of the operational design can be tested by simulation procedures; the simulation program requires some parameter settings--distances between buildings, capacities of buildings, etc.--that a preliminary architectural study can provide.

These are the primary reasons for developing architectural studies at this stage of project planning. We stress the limited purposes of this design because the nature of architectural drawings--no matter how preliminary the planning, or how general the intent--often suggests a degree of practical commitment which is otherwise premature at this time. This is a preliminary study with limited purposes, and it is sufficient to our present needs that it represents a reasonable design. It is not necessarily the intended design of the school, and we do not mean to preclude other possibilities, including the alteration of an existing facility. In this planning phase we have opted for a new facility design because alteration planning is too idiosyncratic to have much general utility. Though we do not explicitly consider plans for alteration, however, it is worth noting that our new facility planning is concerned, in part, with the possibility of conversion back to a plant that would be appropriate for more traditional educational programs--the shells that are subdivided into individual rooms are very nearly standard classroom size. This planning factor should help to establish the general feasibility of conversion in the opposite direction, from classroom to individual areas.

Assumptions About Land Availability

Assumptions about site size are clearly important to any space utilization study, since considerations of multi-story construction costs will influence design choices. For this study, the site size was set at fifteen acres. This is arbitrary, but not completely so, since most sites in California metropolitan areas are at least this large for student bodies of 2,600; on the other hand, such an assumption might be unrealistic for some higher density areas. The utility of the assumption is not its generality, but its provision of a benchmark for subsequent architectural planning.

Individual and Group Space

The most prominent feature of the plans that follow is, of course, the provision for up to 2,300 individual student rooms. This feature is so unusual that it tends to obscure other aspects of the design, and it should also be noted that a significant amount of space is programmed for formal and informal group activity. The cafeteria, for example, will be used for more than breakfast and lunch service; it will be open up to fourteen hours a day for snacks, coke breaks, and informal meetings, as well as meals. The library, and the music and arts center, will have group accommodations as well as provisions for individual study and practice. Lecture and small group areas will be generally available for informal groups when they are not being used for the scheduled program. These activities are emphasized here in order to balance one impression that may be created by the design feature of individual rooms, for we are by no means inflexibly committed to a student-in-his-office model of operations. We provide for the individual rooms as a limiting case, but the interior walls will not be permanent, and if a group of students want to "pool" their offices and share the collective space, that will be possible. Group study facilities will be provided as a matter of course for very young students, who might otherwise find the transition from a classroom atmosphere (K-2) to individual rooms too abrupt psychologically. The choice properly rests with the student; practically speaking it is his space, to use individually or to pool with others in a group mode. The point is not precisely how the space is used, but the fact of its availability to the student, to use as he thinks best. (An example of room reconfiguration possibilities is illustrated in the lower right-hand portion of inset "a," Figure 2.)

Area Analysis

Plan designations and details for the architectural study are as follows:

Plan Designation	Function	Enclosed Area (Sq. Ft.)	Covered Area (Sq. Ft.)	Planned Capacities
R & A	Records & Administration (2 floors)	13,200	9,000	
ISR	Individual Student Rooms (2 floors)	105,600	94,000	Up to 2,300 (Each 6x8 feet)
CR	Classrooms	14,400	....	30 Each (16 rooms, preschool, K-2)
LAB	Laboratories (2 floors)	10,000	....	75 Each (4 labs)
SG	Small Group Rooms	11,200	....	10 Each (32 rooms)
M & R	Maintenance & Repair (2 floors)	16,000	....	
R & G	Receiving & Grounds	8,000	....	
FH	Field House	1,600	....	300
C	Cafeteria	9,750	....	2,000
L	Library (first floor)	9,750	....	200
M & A	Music & Arts (second floor)	9,750	....	300
LEC	Presentation & Lecture Rooms	15,500	....	375 (6 rooms) 500 (2 rooms) } Flexible configuration
TC	Testing Center (2 floors)	14,400	4,600	200
P	Parking (semi-underground)	....	110,950	264 cars
	Totals	239,200	218,550	

Total Plant Size (Sq. Ft.) ≈ 340,000 (total enclosed area plus one-half covered area)

Square Feet Per Student ≈ 130

Architectural study by C. Thomas Wolfe of Harrison and Wolfe, Los Angeles.

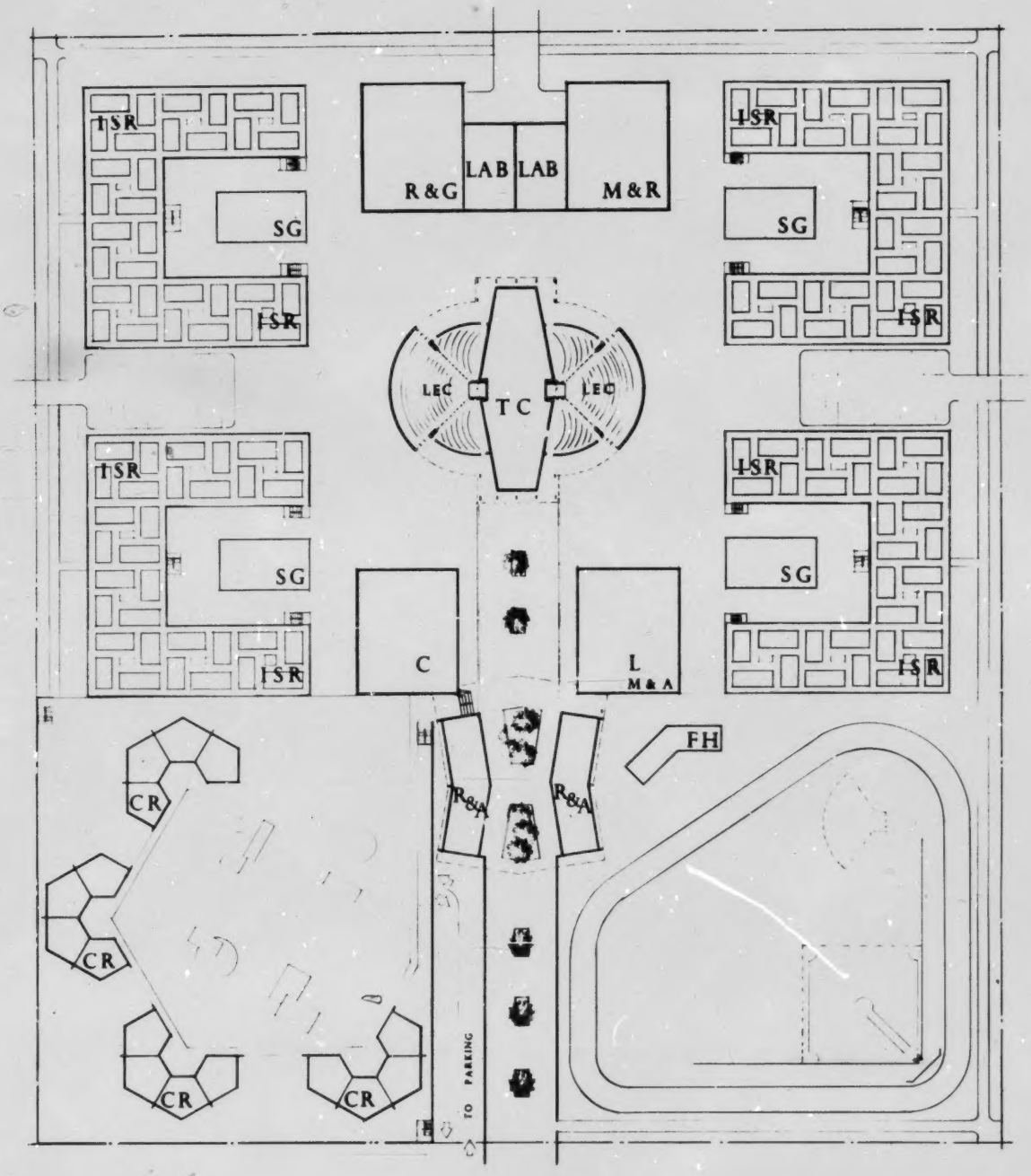
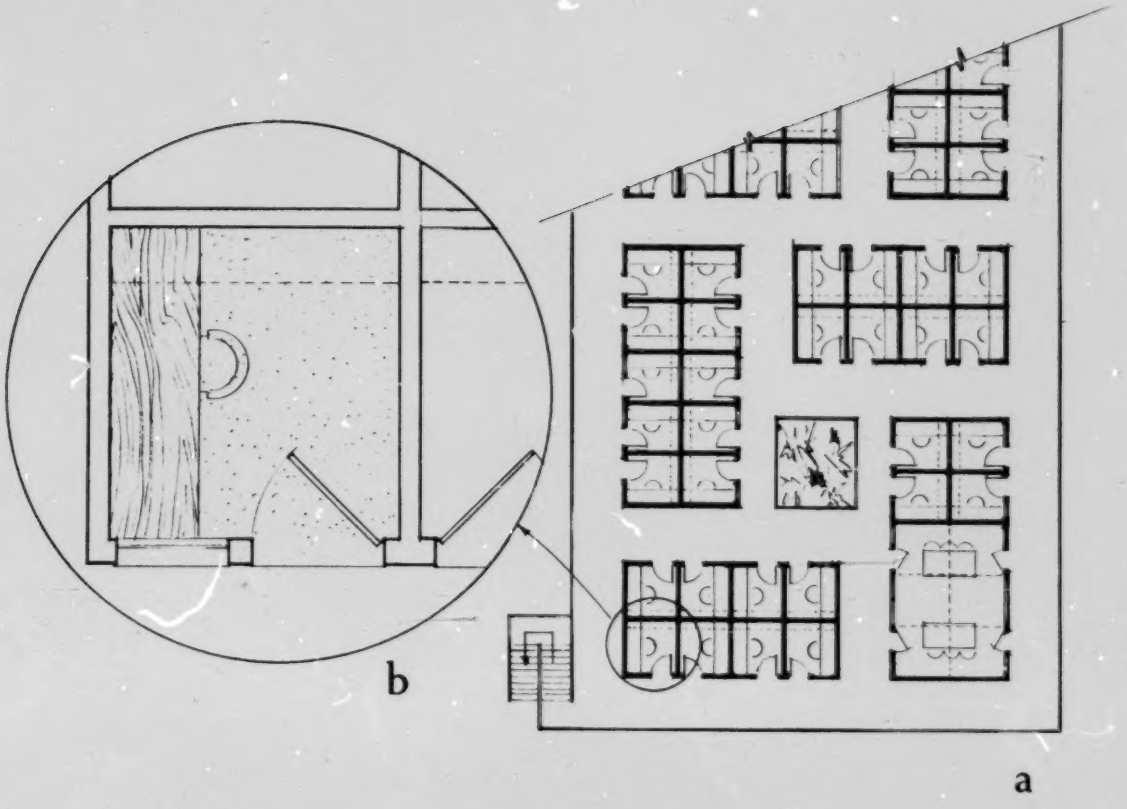


Figure 1. Preliminary Architectural Study: Plot Plan



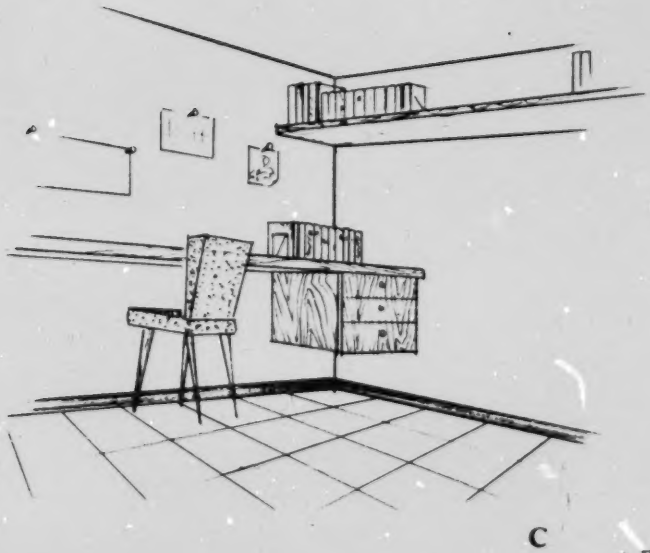


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Figure 2. Preliminary Architectural Study: Individual Student Room Detail

CURRICULUM

The New School is designed to support two separate curricula--an open-ended curriculum to promote broad intellectual inquiry, and a structured curriculum to insure measurable educational achievement. Operationally, the two curricula will be separately maintained, so that neither will encroach upon the other in terms of staff commitment, time, or resources. This separation will not, of course, be complete; if in no other way, the two curricula will intercept one another in terms of a student's time. Though it can reasonably be assumed that the student will find the curricula to be mutually reinforcing, there is no formal plan to integrate them.

Open-ended Curriculum

The open-ended curriculum has three components: presentation, small group meetings, and individual self-directed study. The three represent different facets of intellectual inquiry.

Presentation

Presentation is an opportunity for the student to see the intellect in action. These "lectures" will not serve their usual scholastic purpose of transmitting information, at least not in the sense that students will be held accountable for their content. Rather, they will serve the extrascholastic purpose of being a forum of ideas. Consistent with this purpose, the stage or lectern will not be the exclusive province of the professional teachers. Presentations will be given by members of the school community, by students, and by experts, advocates, and public figures from the wider community, as well as by the staff. (For that matter, the presentations need not be live performances, since some of the best contemporary essays are recorded on electronic media.)

Presentations will be offered at three levels, in order to accommodate the wide range of subject interest and comprehension represented in a school that encompasses kindergarten through twelfth grade. The levels will not be restrictive--any student will be welcome at any presentation. The level-seeking process will be self-selective.

Students will be required to attend about three of the four presentations offered at each level each week. "About three" means that a reasonable average should be maintained over time, but there will be no strict requirement to attend three out of every four. This fairly relaxed requirement is, even so, the most stringent in the open-ended curriculum; its purpose is to ensure some minimal level of exposure. Hopefully it will become superfluous. In any event, there will be latitude of choice for the student, so he will be able to exercise discretion and literally make his presence felt. Attendance will be one of the best unobtrusive measures of effectiveness for the open-ended curriculum program.

Small Group Meetings

Small group meetings are an opportunity for the student to work with others in intellectual pursuits. The content and form of the interaction will not be prescribed; they can be responsive to the immediate needs and interests of the group. At times, the group may be best served by a form of cooperative inquiry, say, by producing a report or position paper for presentation to a governing council, or by organizing a project to improve the landscaping of the campus. At other times, the group may want to debate an issue of school, local, or national importance; or the group may simply get together as a collection of individuals with common interests. The group will be free to define the substance and mode of its own activity.

"The group" is perhaps something of an abstraction. In fact, there will be as many as two hundred groups active concurrently, and an important aspect of the open-ended curriculum will be the choice of groups open to the individual student. Groups will be known by their membership and by their self-styled charters of

activity. Some group, on either count, will be attractive to a given student, and he will opt-in, participating until the group naturally dissolves or he finds another with greater attraction. In some instances the staff may, for the group's or the individual's sake, extend an invitation to a student to join a new activity; but the modal procedure will be self-selection and voluntary membership.

Students will be required to attend three hours of group meetings each week. Again, this requirement is simply to ensure exposure, and is truly minimal considering the latitude of group choice open to the student.

Individual Self-directed Study

Individual study in the open-ended curriculum is an opportunity for the student to pursue any intellectual activity to almost unlimited extent. The "program" consists of nothing more than putting school resources, including personnel, at the student's disposal. In theory, this type of "program" is available at any school; but, in fact, its effectiveness is curtailed because it is usually viewed as an adjunct to the regular program. There is, in principle, nothing to prevent a student from using the art room, the library, the auditorium, or the data processing equipment when they are not being used for classes or for the essential business of the school; but with the ordinary school operation, these opportunities are confined to "after school" hours, and there is little explicit encouragement to make use of such facilities.

It is not enough, however, merely to open the doors or provide the materials. There must also be encouragement, guidance, and coaching by a staff with these explicit responsibilities; and there must be time for the student to go his own way. The facilities availability, the staff commitment, and the student time are all provided for in the New School design.

Finally, the open-ended curriculum is as open with regard to enrollment as it is with regard to content and form; we particularly have in mind parents and

other members of the community. While all aspects of the school's educational program will be open to the community, the usual entry might well be through the open-ended curriculum, through attendance at presentations, small group participation, and the pursuit of individual study interests.

Structured Curriculum

Purpose

The structured curriculum carries a basic charter in the school's educational program: It will be the means by which the student will acquire the skills and facts that are prescribed in the standard course of study and are formally assessable as educational achievement. While the overall goals of the program are not narrowly confined to the standard course of study alone, nor functionally limited to the requirements imposed by achievement assessments, this part of the curriculum does have special importance for the school's role in meeting society's legitimate demands for educational accountability. In this practical sense, the structured curriculum is basic.

Structure and Organization

In developing the structured curriculum, the substance of each content area will be modularized by deriving a sequence of particular and specific objectives that add up to the general requirements for each course. The essential rationale of this approach is, of course, curriculum management, primarily as a means of relating curriculum to the pace, needs, and interests of individual students. The New School design adopts this curriculum framework and extends it to cover all the accountable curriculum in the instructional program. Each course of study, then, will extend the entire range from kindergarten through grade 12.

For planning purposes, the number of modules in the structured curriculum has been initially established at one thousand. We have also found it helpful,

using the standard course of study as the departure for planning, to block out the relative distribution of units by content area, through the various student levels. These initial planning parameters are summarized in the Appendix.

Any detailed characterization of the structured curriculum is, of course, only an approximation of what will ultimately be produced. At this stage we need only make the assumption that a standard course of study can be modularized into units of specified duration, since such an assumption satisfies our minimal criteria for an acceptable structured curriculum; namely, that it be comprehensive of the generally accepted areas of achievement (the standard course of study insures this), that the number of units be administratively manageable (one thousand units can be adequately monitored and evaluated), and that the duration of the units be pedagogically effective and tractable (the standard course of study mapped into one thousand parts yields units whose duration should permit a reasonable amount of substance within a time frame that students can handle). Ultimately, of course, there will be somewhat more or less than one thousand units, and they may be organized in more effective ways than by standard subject matter. These are matters that are best left to be resolved in the process of curriculum development. The design specifications are open to any possibilities that are consistent with the substantive aims and operational demands of the educational program. It seems likely, for example, that curriculum experts would not be satisfied with an organization based on traditional subject area divisions, preferring a more integrated approach which explicitly relates elements from different areas. In fact, the scope of our proposed curriculum development provides a rare opportunity to produce a completely articulated course of study, both vertically and horizontally. Though no approach is precluded, whatever approach is taken must satisfy the purpose of the structured curriculum in the system, i.e., it must produce educational achievement in standard areas of accountability.

Whatever principle of curriculum organization is utilized, the resulting general structure will be a network of units. This is the form in which it will be presented to the student, so that he can concretely map his progress, readily

perceive his options, and easily define his long-range and intermediate objectives. The network will consist of basic paths (a chained sequence representing the core units in the curriculum), alternate paths (representing different modes or internal sequences of presentation), optional sequences (offering in-depth study at different points in the curriculum), and major branches (representing specialization at more advanced points).

The curriculum network must also be psychologically manageable from the student's point of view. A key advantage of the continuous-progress, full-year operation is the provision of greater latitude for the student to organize his program to his own needs. If the continuous-progress structure is not punctuated with frequent points of certified achievement (permitting him to pause for vacation, shift his efforts and interests elsewhere, etc.) then much of this practical value will be lost. There is a requirement, then, for units of more or less uniform and relatively short duration.

In operation, a student's academic history record will show all of the units that he has mastered to date, and he may elect to work with any unit for which he has demonstrated readiness by having mastered the necessary prerequisite units in the sequence. With core (and alternative) units, optional units, branch sequences, and a wide variety of content areas from which to choose, he will have an ever-expanding latitude of choice.

Unit Format

The format we propose for the curriculum units can best be described as that of a procedural lesson plan. This is a format which, in richness of detail and complexity of design, lies between the extremes of an outline lesson plan and a computer-based instructional sequence. The outline lesson plan typically states objectives in general terms, lists materials to be used, and suggests some supplemental resource materials. In the hands of an experienced teacher, this sort of plan is undoubtedly an adequate guide to instruction. The teacher fills the gaps with well-practiced procedures. The practical problem, of course, is that an individualized instruction system cannot afford to place a teacher in

more or less constant interaction with the student, and the usual outline lesson plan, without teacher interpretation, is not an adequate guide for individual study. By obvious contrast, the computer-based sequence cannot have even the smallest gap--every step must be specified down to the last detail. This model also has practical difficulties. Most apparent is the cost of production and implementation for computer-aided (or other forms of small step) instruction. These costs increase significantly when the student is incapable of comprehending written text, for if the student cannot yet read, the task of automating curriculum presentation becomes substantially more difficult. A less obvious cost of any small step instructional plan is the cost of revision, a cost that typically increases in direct proportion to the amount of instrumentation or mass produced material that is used in the process. Practically speaking, no matter how carefully the package is certified, there will still be poor items, sequences, or procedures; but once the package goes into production, revisions are months or years away. In the meantime, the students must absorb the "costs" of deficiencies even if they are known to exist.

Between these two extremes lies the model that we propose. In content and presentation, it is far more specific than an outline lesson plan, but far less detailed than a small step program. It relies heavily on the human capacity to generalize from a minimum of directions, and to adapt to unusual or unique situations. The directions will not exceed a few typewritten pages, but they will be sufficient to guide the paraprofessional instructor (a student of high school age) in the uniform administration of a curriculum unit. Unit objectives will be specified in operational terms, amounting essentially to the preestablished criterion of unit mastery. Prerequisites will be specified, with skills related to preceding units, and with special attention given to the vocabulary required. Materials will also be specified, including samples and diagrams of any special equipment that cannot be generally described. Whenever possible, the sequence will be organized by intermediate objectives; this is important for administration, since student failure in meeting the intermediate objectives should result in referral to counseling, rather than continuing frustration for the student. Following this general description of the unit, the body of the

document will present the instructions for unit administration. (A sample, illustrating these points, is included in the Appendix.)

Generally, the curriculum will be formulated either as units for assisted instruction or as units for independent study. At either extreme on the assisted-independent continuum, the necessary difference in formulation is obvious; assisted instruction units would be wholly tutor-oriented, covering instruction and guidance for unit administration; while the independent study units would be wholly student-user oriented, covering substantive content directly. At that abstract point on the continuum where the two meet, the units will have elements of both orientations.

Administration

The assisted instruction units will be administered by tutors and tutoring supervisors. These will be students in the Job Program; they will all be of high school age. Each tutor will be responsible for three units, but will never be required to administer more than one at a time, and never to more than four students at a time. The faculty in each content area will be responsible for the training and supervision of the tutors.

Each curriculum unit will average approximately two weeks (or ten hours) of study (or instruction). This prescription is derived from two objectives for the modules: One is psychological tractability for the student, which we discussed briefly above. The other is administrative effectiveness, particularly as it relates to the careful monitoring of student progress. We propose to monitor on two different levels. Within-unit monitoring will be accomplished by the student himself (if he is studying independently) or by tutors (if he is being assisted in his study); this kind of primary feedback is essential to the immediate learning process. Between-unit monitoring will be a more general, system-level check on the adequacy of each instructional unit in progress. To accomplish the latter type of monitoring, the system must have some criterion for sensing potential problems. The criterion we use is expected time of unit completion; if this time is significantly exceeded, that is a signal of potential

difficulty. The average expected completion time designed for--two weeks--was chosen as a balance between the demands of efficient data processing (which would be easier if unit duration were greater), and the need to avoid the prolongation of difficulties (which could be foreshortened if unit duration were reduced).

Development and Production

In considering possible strategies of curriculum development, we specified that each unit should have the following characteristics or features: (1) approximately two-week duration, (2) explicitly identified entry skills, including the required vocabulary, (3) statements of overall and intermediate objectives, with limiting conditions on content coverage and mode of presentation, (4) specified procedures for administration, including intermediate criterion tests, and (5) a criterion test of unit mastery. While none of these requirements is unique to our program of individualized instruction, we do have unusual requirements for the specified procedures of unit administration, in that our instructors are paraprofessionals, so the instructions for administering the units cannot presuppose extensive preservice training. The procedures must be specific enough to enable an intelligent fourteen year old (with minimal on-the-job training) to be an effective tutor for the unit.

Given these requirements, our first strategy, for obvious practical reasons, was to seek the advice of curriculum specialists and curriculum materials centers as to the applicability of off-the-shelf materials. Two facts emerged from this inquiry: First, the most carefully formulated materials are usually tied to "teaching machines" of one sort or another, requiring heavy capital investment in equipment in order to use the units. Second, almost no materials (and certainly no substantial package of materials) completely met our criteria; so we would have to augment or revise any series that we might purchase for our use.

Either of these alternatives would lead to serious practical difficulties. Since we want to avoid any pervasive commitment to an equipment vendor, and since substantial revision of existing materials would present serious administrative and financial risks, we decided to explore an alternative strategy. We discount,

of course, the possibility of developing a fully articulated, modularized curriculum by the usual methods and standards; that could easily become a ten- to twenty-year project in itself. The development of such a curriculum does, however, appear to be a viable possibility if we use standards and forms of development that are more appropriate to our design.

We plan to produce one thousand curriculum units in one year. This will be possible because the design of the units is predicated on two special conditions or our operational plan: In their administration, the materials will always be intelligently mediated; in addition, they will be undergoing continuous evaluation, validation, or revision. Given these assumptions, the development task is substantially reduced. We can reasonably plan to develop a thousand units in the form of procedural lesson plans of generally workable quality.

Intelligent mediation of the curriculum materials--the first precondition for our development strategy--will be provided by tutors and tutoring supervisors; our proposed format of the procedural lesson plan is explicitly a design for this objective.

Provisions for continuous evaluation, validation, or revision of the curriculum--the second precondition for our development strategy--are an integral part of the administrative design. The relationship of these provisions to our plans for curriculum development and production deserves some elaboration: Every two weeks, each responsible faculty member will receive a cumulative record of performance on each of his units; these records will show the distribution, by time spent on the unit, of students who mastered the material, and of those who did not. These results will be the primary basis for identifying those units that need improvement. Other bases for identifying needed improvements will be feedback from tutors, students, and counselors. The prospect of this ongoing improvement procedure means that we need not spend time and money to achieve guarantees of uniform effectiveness in the original set of units. In the cost of curriculum formulation, there is an order of magnitude difference between a set of workable units, and a set with certified reliability and effectiveness. Even if we could afford the latter, we would still incorporate our improvement procedures, so it seems most reasonable to begin with the far less costly version.

In operation, we cannot allow this commitment to improvement to be subverted by the usual costs of revision. Curriculum materials or expendibles will not be produced in volume; operations will produce these materials on a demand basis, so professionals who see a need to revise the curriculum will not be concerned about costs.

Our plans for the implementation of this development strategy have been tentatively drawn. We intend to involve as few people as possible in the actual development of the units, and we believe they should be placed in a close working relationship, preferably in the same physical location, in order to facilitate coordination. We will provide them with support--clerical, typing, graphic, and even model building--so they will not be unduly distracted from their main task of formulation. They will also be provided with opportunities for regular contact with students, not only to try out their formulations, but also because the best curriculum developers are refreshed by student contact. Finally, we intend to structure their rewards through some form of piece-work payment, in order to place a premium on continued production.

We plan to hire (obtain full-time commitments from) approximately twenty people who live, or are willing to relocate, within commuting distance of a common assembly point. At that location we will provide meeting space, work space, and technical support. Each person would be expected to produce about fifty units; allowing time for initial planning, the expected production average would be approximately three units every two weeks. Members of this staff will serve in two capacities--as developers and as panel members. As panel members they will critically review the units being developed, and will be paid nominal salaries. As developers they will create units, revise to critical review, and supervise final production. They will be paid for each unit completed.

Ideally, the best of the curriculum developers would be retained as members of the Instructional Services faculty on the New School staff; efforts will be made to provide this continuity into actual operations.

STAFFING AND STUDENT JOBS

Staffing patterns in the New School are unique, in that nearly everyone is "on the staff": Every functional staff division will include some number of student workers with responsibilities either for direct service or for assistance to faculty members who perform the service.

Functional responsibilities in the New School are unusual in a number of respects. Classroom teaching is not the predominant function; for some staff members, particularly those working in the areas of small group study and child care, responsibilities will closely approximate classroom teaching, but the greater majority will be concerned with other functions--supervision, training, curriculum evaluation and development, testing, guidance, counseling, performance evaluation, and so on. Some staff functions have no counterpart in the typical educational system. Nearly half of the staff will be assigned to non-curricular duties, with responsibilities for providing general support services; but while their functions are not formally curricular, they will serve the broader educational purpose of providing a bridge between curriculum and practice.

The operations of the New School are organized in terms of services rendered: Instructional, Instructional Support, and General Support. The staffing organization reflects these functional patterns.

Instructional Services

The Instructional Services staff includes those concerned primarily with the individualized instructional system, and those concerned primarily with the open-ended curriculum. The responsibilities of the former group can be more readily defined. In each case they are specialists in given content areas of the curriculum. They are responsible for training and supervising their student staff, which includes instructional supervisors and assistants, curriculum counselors, and laboratory supervisors and assistants. They are also responsible for evaluation and improvement of the curriculum. They share with all the

staff (student level included), a responsibility for lecture preparation and presentation. In addition, they have a responsibility, as well as a right, to improve themselves professionally, whether this means taking graduate courses, attending conferences, or simply devoting some portion of their day to professional reading. The staff concerned primarily with the open-ended curriculum must be generalists in spirit, though they may, of course, have a content area specialty. They are responsible for training and supervising their student staff of group leaders, who assist them in guiding small group study. They have, by design, no responsibility for achievement assessment or curriculum evaluation. They share general responsibilities for lectures, and common responsibilities for professional improvement.

Instructional Support Services

The Instructional Support staff performs the three interrelated functions of testing, guidance, and counseling--the sensing and corrective functions of the system. The staff concerned with testing is responsible for test administration and test evaluation. The administration is performed by student staff under faculty supervision; evaluation is performed by the faculty. The staff concerned with guidance is responsible for monitoring student progress in the individualized instructional system, and for assisting students in selecting their curriculum units. Both functions are performed primarily by student staff, with faculty back-up for unusual or difficult cases. The staff concerned with counseling is responsible for identifying and correcting system deficiencies at the individual student level. This function is performed primarily by the faculty, with student assistance. The Instructional Support staff carries the greatest responsibility for system coordination; generally, they will be the first to be aware of the various problems that are bound to arise, and hence will have the first opportunity to initiate corrective procedures by getting the appropriate information to the responsible people.

General Support Services

The General Support staff performs those functions that support the operations of the school. These functions are as diverse as child care and data processing, but each contributes to general support. The pattern of staff responsibilities is generally the same in each of the operational areas. The principal functions are performed primarily by students, with the faculty responsible for training and supervision. The General Support staff does have responsibilities for lecture presentation and professional development. These responsibilities are explicitly noted, lest it be assumed that the functions of this staff are wholly practical, and thus professionally apart from faculty who are more directly involved with formal instruction. If General Support staff are perceived as second-class professionals, their unique potential for bridging curriculum and practice will be lost.

Staffing Levels

Proposed staffing levels are given in Table 2. These are preliminary planning estimates based on the following considerations: For Instructional Services, the essential criterion for determining staffing levels is the number of curriculum units, and, more particularly, the number of assisted instruction units, since these require tutors who must be trained and supervised. For Instructional Support Services, the primary determinant is load; on this basis, testing and guidance are approximately equivalent, since the two are sequential activities in the Instructional Program. Though the activity rate for counseling will be lower than for testing or guidance, faculty on the counseling staff are "overrepresented," because they will perform the service directly. For General Support Services, the considerations are load, duration of activity in the school day, and diversity of function in a given area of operations. In all cases these levels are only first approximations, to be modified as planning becomes more detailed. This process of correction and refinement will never be complete, since levels of staffing will vary in accordance with continuing operational modifications.

Instructional Services

	Faculty	Students-at-Work III	II	II	I
Structured Curriculum	24	147	462		
Open-ended Curriculum	10	42			
Total	34	189	462		

Instructional Support Services

	Faculty	Students-at-Work III	II	II	I
Testing	4	16	40		
Guidance	4	16	40		
Counseling	6	8	20		
Total	14	40	100		

General Support Services

	Faculty	Students-at-Work III	II	II	I
Child Care	3	12	18	60	36
Food Services	2	15	15	98	90
Data Processing	2	15	16	40	45
Secretarial	2	45	24	32	45
Communications	2	10	22	48	84
Audio-Visual & Duplication	2	15	14	70	50
Library & Materials	2	10	14	70	30
Custodial & Grounds	3	15	42	119	120
Maintenance & Repair	2	27	40	148	81
Receiving & Stores	2	15	16	72	45
Personnel & Administration	4	21	20	72	63
Total	26	200	264	829	689
Overall Total	74	429	816	829	689

Table 2. Staffing Levels for Instructional, Instructional Support, and General Support Services

Staff Selection and Training

Careful staff selection and training are critical facets of any innovative educational design, and their importance is amplified in a program predicated on openness and self-correction. Though recruitment, employment, and training are normally treated as separate personnel procedures, we propose to combine all three operations in progressive stages of staff integration into the New School system.

We will not rely heavily on standard recruiting methods. Interviews and qualification tests are helpful, and will be employed, but they often fail to identify the enthusiasts who do not, or cannot, realize the practical implications of the verbal commitments they make. As an antidote, we propose a special variant of performance testing as an additional prerequisite to permanent employment in the school. This "testing" will take the form of a preservice training period which will last three months. During the training period, all staff will be on full salary. The training will progress from orientation lectures to walk-throughs, to simulations, and will culminate in the opening of the school.

As the training moves closer to operational procedures, some of the trainees may decide not to stay. Some changes of mind are inevitable in any new program, but these decisions do not usually become firm until the program is well under way, and personnel changes are then difficult or impossible. If training is to serve in part as a screening device, therefore, it must be accompanied by the provision of means for leaving the program. Fortunately, the New School can operate without a full staff, so the demands of the program need not compel trainees to remain against their better judgment. By the same token, no one should feel pressed to remain for strictly financial reasons. The New School will therefore offer to continue paying partial salaries to trainees who leave, until they can find other positions.

Presumably, most of the staff will come from the host district, though some may not, if the district does not have qualified personnel to fill all the positions. As a general rule, host district teachers will be given the first opportunity to

fill staff positions, but at the same time the New School should have the prerogative of attracting extradistrict personnel. For personnel who are already employed by a school district, their job with the New School (at least the initial year) should be taken under a leave of absence, in order to protect their rights, benefits, and seniority.

The New School needs a thoroughly professional staff. A good program alone will do much to attract and retain excellent personnel, and attractive salaries should be a powerful reinforcement. We intend to pay our staff well; the mean salary will be near the top of most present salary schedules. We plan to use this margin in part to effect some changes in salary administration. We do not propose to change the entire salary structure (we will satisfy existing schedules as a minimum), but we intend to make salaries relate, at least in part, to performance. In effect, we will be offering a bonus salary to teach in the New School, but the bonus margin, and its rate of increase, will not be governed by the usual automatic advances.

This is, of course, a form of merit pay, and merit pay practices have typically been weak in the necessary but troublesome area of evaluation. Adequate evaluation can never be reduced to quantitative terms alone, and we do not propose such a reduction; but some objective indices of performance are essential, and the system will generate these measures. (They are described in the section on curriculum.) This data will provide a foundation for our merit pay practices, but the full set of criteria will be devised, and periodically reviewed, by a group composed of staff, students, community, and administration.

Student Jobs

Students, as we have noted, are an integral part of the operations staffing. They participate through the Job Program, which provides administrative and personnel services to students-as-workers. In addition to general considerations of staffing responsibilities, functions, and levels, there are aspects of the Job Program that deserve further elaboration.

There is a job for every student who wants to work. Jobs are scheduled on a regular basis, covering the same period daily throughout the week. Jobs are specifically set for given hours of the day; however, the same "job" is also scheduled for other times (e.g., 7-9, 9-11, 11-1, 1-3, and 3-5) in order to have "all day" coverage for the service being performed. This means that there are not only a variety of jobs, but also a variety of times that each is offered. Jobs are classified by work levels, according to characteristics of daily duration and pay. Jobs are differentiated as to duration--one, two, or three hours daily--to accommodate differences in maturity and endurance within the six- to eighteen-year-old range of the student population. Jobs are differentiated as to pay rates, to reflect the degree of responsibility and effort required. The wages range from 25¢ to $2 per hour. These aspects of job work levels are summarized in Table 3.

Work Level	Hourly Rate	Daily Hours	Weekly Pay	Monthly Pay
I-1	.25	1	1.25	5.00
I-2	.30	1	1.50	6.00
I-3	.35	1	1.75	7.00
II-1	.35	2	3.50	14.00
II-2	.40	2	4.00	16.00
II-3	.45	2	4.50	18.00
II-4	.50	2	5.00	20.00
II-5	.60	2	6.00	24.00
II-6	.80	2	8.00	32.00
II-7	1.00	2	10.00	40.00
II-8	1.40	2	14.00	56.00
III-1	1.60	3	24.00	96.00
III-2	2.00	3	30.00	120.00

Table 3. Daily Hours and Hourly Pay Rates for Student Job Levels

The student jobs are "real," not make-work, tasks. While this seems reasonable for a seventeen-year-old working three hours a day, it may appear somewhat unrealistic for five-, six-, and seven-year-olds working one hour each day.

There is, of course, some mix of symbolism and functionalism represented throughout the job hierarchy, with greater symbolic value at the lower levels. That is not to say, however, that young students cannot fulfill necessary and important functions. They can be extremely helpful, for instance, in communications: Flexible scheduling programs typically have problems with internal communications, because it is difficult to locate people on short notice without elaborate attendance accounting procedures that serve little other purpose. For the New School, with its open scheduling program, this problem is potentially greater, and the attendance accounting procedures would have to be even more elaborate. The alternative to accounting is a simple procedure of search--begin with the office or individual room, and from there be directed, if necessary, by posted schedule, to the whereabouts of the party being sought. This relatively simple but extensive task is one that younger students could easily accomplish. There are similar tasks throughout the job domain. Errands need running, supplies need counting and replenishing, lists need checking, and simple manual tasks need doing. Indeed, five-, six-, and seven-year-olds often fulfill many job-like functions in traditional schools (ball monitor, attendance monitor, messenger, clean-up team, etc.), but they do so without formal acknowledgment, and without pay.

The allocation of student jobs across the different areas of school operation is described in the Appendix.

OPERATIONS

Perspective

The usual perspective of operations is the detached, Olympian view of top management. When that view is committed to paper, the far-away flesh and blood is lost, so that every organized enterprise ends up looking like a Tayloresque assembly line. This description, too, will eventually take on the same appearance--flow charts, personnel allocations, scheduling algorithms, and the rest--but as an antidote, we will first offer a view of operations from the unorthodox perspective of those who are immersed in the process. (This description recapitulates and elaborates some operational details first presented in preceding sections of the design; in order to present a reasonably thorough and balanced view of operations, these redundancies have been allowed to remain.)

The Student

Since there will be students of all school ages, it is impossible to offer a single, representative student perspective--the school will look progressively different to students in different stages of maturity. There are, of course, important milestones in any student's career. Perhaps the most important, though not the first, is his matriculation to independent study. This is important to the student, not for the gratification of his teachers, or credit to the institution, but because it gives him much greater latitude in pursuing his objectives and managing his own time--he no longer needs to be restricted by keeping appointed hours of tutored instruction. He is not thrown completely on his own, but his occasional need for assistance can now be satisfied at his convenience. Another milestone occurs when he is given a room of his own; this would be about the time that he begins independent study, since the privacy of one's own room and the ability to study on one's own are natural correlates. Along another major dimension of the student's career, his job at school, there are a series of significant changes associated with advancement to jobs with more interest, more responsibility, and better pay.

Finally, though not most significantly, the student will graduate. Between his admission to the school and his graduation, he will compile a record of achievement (achievement only) through his day-to-day interaction with the school's personnel, services, and facilities. Without intending to be exhaustive, we will describe this daily process.

The school will be open from seven in the morning until ten at night; the student is not expected, of course, to attend all fifteen hours. In fact, the student is not required to be at school except when others are depending on him to be there (his job hours, appointments, group meetings, etc). Aside from these "appointed" periods he may, at his option, be at school any, all, or none of the time it is open. For the sake of illustration, let us suppose that the student has a two-hour job (daily) from nine to eleven, that he is in a study group that meets three times a week (Monday, Tuesday, and Thursday) from one to two, and that he has an appointment to take a test on Wednesday of this week at three--that would be his "fixed" schedule for the week. These are the times that people are explicitly counting on him to be there. Suppose (to best illustrate the "school day" options) that he comes to school at seven. The cafeteria, the library, and the recreation field will be open if he wants to use them; or he can spend his time studying in his room; or, realistically, he can spend his time however he pleases. All of these options are available to him for any part of his unscheduled day. At eight, some other options open up: all the laboratories, and the music and art work rooms are open (until eight that night); also, curriculum counselors are available to help him in any subject of independent study (this type of help is available until eight at night); and all departments of school operations are open (until five) to transact any business he may have with them (records, personnel, appointments for testing or counseling, etc). Within the course of the week the student has only one other (conditional) commitment: Each week, four different presentations are offered (and each is repeated within the week so that student job hours will not preempt a given presentation); he is expected to average about three presentations per week. Finally, throughout the week, extracurricular and leisure activities are not arbitrarily confined to "after school"; they can occur at any time during the school day.

There are two major variations on this daily theme, both of which affect the appointed or "fixed" portion of the student's schedule. The first is the duration of his job; it can be one, two, or three hours daily. Generally, the very senior students have three-hour jobs, the very youngest have one-hour jobs, and the majority have two-hour jobs. In this regard, the youngest students have more unscheduled time, and the oldest students have less. The second variation relates to independent study; the students who have not achieved demonstrated independence must rely on assisted (tutored) instruction. The fact that hours of assisted instruction must be appointed means that these students will have more "fixed" hours than the students who can study independently. On balance, the amount of "free" time should tend to be about the same, on the average, for all students.

In sum, the operation of the school is intended to offer the student a great deal of latitude within his school day--as much open time, resources, and services as possible. Accompanying this latitude, there will be provisions for encouragement, inspiration, guidance, and counseling--the school must be sensitive to the fact that the student will not necessarily use his opportunities to advantage. The school design assumes that the student's latitude will be, on balance, advantageous to him; but it must provide for diligent review of this assumption in each individual case, and be prepared to help the student who needs assistance.

Faculty

The faculty responsibilities are highly differentiated. It is therefore difficult to describe a uniform faculty view of school operations; there are, however, some characteristics shared by all, simply by virtue of their being professionals in the school.

All faculty will work eight hours a day, five days a week, the full year (with normal holidays and one month vacation). Like students, they will be expected to be at school whenever anyone is counting on their being there; but unlike

students, they will be committed for the greater portion of their school day--someone, some group, or some activity will account for most of their time. However, their days will not be completely committed; they will have some time explicitly reserved for their continuing education and professional advancement. Additionally, each faculty member will have the reassurance that his presence is not critical to a given day's operations. While this may, at first, appear to be a dubious reassurance, it is actually an important professional advantage, for the operations of a truly professional milieu can generally accommodate absence without having to fill a vacant position with a human substitute. There will be no substitutes required at the school; the design does not require placeholders. The operations plan also specifies some overlap for every faculty position; the faculty will cover the extended hours of operations by working in shifts. Work in shifts (once one gets beyond the "factory" connotations) will be especially useful to anyone concerned with continuing his formal education, since many professional opportunities, particularly graduate school courses, are precluded by the "normal" teaching schedule.

Each faculty member will be assigned a student staff; some portion of his time, then, will be allocated to supervision and training, with the allocation varying according to the various specialized functions. In secretarial services, almost all the work will be done by a sizable student staff, whose training and supervision will consume most of the responsible faculty's time; at the other extreme, in counseling, the faculty will be directly involved in providing service, with a relatively small student staff to assist, and supervisory duties will therefore be minimal. Regardless of their extent, training and supervision are important functions, since they bring faculty and students together in a working relationship.

Members of the faculty may also elect to spend leisure and recreational time on campus. Hopefully, the faculty will view the school as more than a place of employment; opportunities that may induce students to spend their leisure time at school are opportunities for the faculty as well. A faculty member need not ignore the facilities of the field, shops, library, laboratory, or academic center, just because he works at school.

Beyond these most common characteristics, faculty functions become too differentiated and specialized for a general description to cover them all. A faculty member may work from seven to four, eight to five, ten to seven, twelve to nine, one to ten, or even a split shift if that is best; he may have from one to nine faculty associates who share his general area of responsibility; he may have a student staff of from three to thirty; he may work mostly in his office or mostly away from it; he may use a great deal of secretarial support or practically none at all; he may teach directly, through paraprofessionals, or by on-the-job-training. In every case, he will be well compensated, and no matter what his area of responsibility--custodial and grounds, child care, language arts--he will have full standing as a faculty member.

Overview

Turning from anecdotal accounts to a description of operations in more formal and quantitative terms, the perspective becomes more comprehensive, but also more abstract and fractionated. The framework for this perspective is an overview of operations. There are two parallel programs in the total system: the Instructional Program and the Job Program.

Each of these programs is organized into these functional components:

Instructional Program	Job Program
Selection--functions relating to choice and scheduling of a student's curriculum program--study groups, presentations, self-directed study, and individualized units.	Placement--functions relating to job openings, qualification, selection, and hiring.
Instruction--functions providing resources, assistance, and counseling in the instructional process.	Work--functions related to training, performance, and improvement on the job.
Evaluation--functions relating to assessment, correction, and guidance.	Evaluation--functions related to pay, evaluation, job satisfaction, and job mobility (work interests, aspirations, and qualifications).

These programs are designed to provide both direct and indirect benefits to the student. The direct benefits of each are largely self-explanatory. The Instructional Program provides intellectual skills, content, stimulation, and opportunities for exploration; the Job Program provides practical skills, experience, pay, and opportunities for accomplishment. The indirect benefits are less obvious. Each program is designed to elicit student choices, decisions, and judgments throughout his course of progress. The range and focus of student self-direction can be specifically related to program components:

Instructional Program	Job Program
Selection--the student can select study groups from a wide range of offerings; can select lectures in terms of content, level, and lecturer; and, in his individualized study, can select from a network of curriculum units. The constraining and influencing factors in his choices will include: satisfying basic requirements, fulfilling prerequisites for jobs, pursuing area interests and career goals.	Placement--at any time, the student can apply for any of the jobs at the school. The constraining and influencing factors in his choice will include: awareness of and qualification for job prerequisites, satisfaction of work interests, and aspirations for better pay.
Instruction--when a student matriculates to independent study he will assume responsibilities for budgeting his time, for knowing when he needs assistance, and for self-evaluation of his mastery (readiness for testing) in units being studied.	Work--in addition to specific job skills, performance will involve coordination with others, judgments about job procedure, and self-evaluation of task performance.
Evaluation--assessments, positive or not, will require analysis and judgment; mastery of a unit will require judgments to determine his future course of study; and assessments below criterion will require judgments as to the nature of the problem and the most effective means of correction.	Evaluation--formal evaluation and pay rates will require analysis and judgment; satisfactory performance will lead to consideration of advancement, better pay, and new work aspirations; unsatisfactory evaluations will require analysis of the assessment, identification of problems, and formulation of improvement procedures.

Each program, then, deliberately encourages the student to exercise the important practical skills that build self-reliance. This has its price, for the programs are not as tight and parsimonious as they would be if we were concerned more with organizational elegance (i.e., with designing a system for administrative convenience) than with broader educational objectives for the students.

Processes

The operational services and functions that make these programs work are best revealed by an analysis of process--by following the student through the component steps of each program.

First the Instructional Program. In following the student through this program it seems natural to start with the selection phase. For descriptive purposes, this is the best entry point, but in actual practice the selection process is part of a cycle: selection leads to instruction, which leads to evaluation, which, in turn, leads to a new selection, etc. Selection then, always takes place in the context of past experience, emerging interests, record of accomplishment, and so on.

Once a week, the student selects his presentations and small group discussion sessions from a published program of offerings in the open-ended curriculum. There is no formal assessment in the system directly related to these instructional activities. As far as the student is concerned, there may be tangible or intangible means of evaluating these experiences, but he will know that he can make his choices without having to worry about tests and exams, which will not apply to this part of the curriculum. As far as the teacher is concerned, measures of effectiveness will be related directly to instructional purpose (i.e., stimulating and nurturing student interests). There are a number of unobtrusive measures of this effectiveness, beginning with attendance, which is a valid criterion where students have genuine options.

In the structured curriculum, the selection process is more formal. The occasion for selection would be mastery of some preceding unit, with selection possibilities a function of where the student stands in the total curriculum network--any unit for which he has mastered the entry skills is open to him. In the long run, students do have one broad constraint on their selections, namely, that they must eventually study those curriculum units that represent the academic requirements of the state, district, or community. In practice, this constraint will not be obstructive.

Selection of a curriculum unit naturally leads to the instructional phase of the program. In this phase there are two main streams: assisted instruction and independent study. The primary difference to the student, as we noted earlier, is that independent study gives him more latitude in his schedule, since he is not constrained by an appointed instructional period with a tutor. The primary difference to the system is that assisted instruction requires trained tutors--at least one for every unit, for every hour it is offered, for not more than four students at a time. This is a sizable requirement, manageable only with careful scheduling and supervision. The scheduling is handled at the time the student selects the unit; the supervision is, of course, continuous throughout the instructional process. There can be no a priori criterion for matriculation from assisted instruction to independent study. In practice there need not be hard and fast rules, since the student will be encouraged to matriculate as quickly as he feels he can, while at the same time there will be safeguards (described below) which protect him from getting in "over his head."

While no rigid criterion is required in practice, some optimum matriculation point must be assumed for planning purposes; we have established this point between the fourth and fifth levels of curriculum. We consider this a conservative estimate, but if, in fact, more than 800 students (four grade levels) require assisted instruction, we shall at least have a benchmark for subsequent planning.

Since the program is open-ended to the student, the instructional phase presents the system with a requirement that is not strictly a teaching function: for the student's sake, there should be some bounds on the latitude he is given. Operationally, this means that problems and difficulties (not necessarily the student's) should not persist indefinitely; within reasonable time limits, if he has not shown any sign of progress, he should have the benefit of counseling. Any boundaries on "reasonable limits" will be somewhat arbitrary, but if counseling procedures are flexible, the necessary arbitrariness will not be dysfunctional. In operational terms, the system expectation for each curriculum unit is established as approximately ten days (i.e., a student will be expected to complete a given unit in two school weeks, and the individualized curriculum is designed to that criterion); with a ten-day expectation, the "reasonable limits" are placed at fifteen days. Thus, if a student has shown no progress on a unit for three weeks from the time of initiation, he will be contacted by a counselor. The school will keep a running record of all units-in-progress, so that signs of potential problems can be sensed, and counselors can be informed. These information processing needs will be provided by the support system.

Instruction, in the individualized curriculum, naturally culminates in the evaluation phase. Each curriculum unit has an associated criterion-of-mastery test which is administered in a central test facility--this applies to both assisted instruction and independent study. There is no fixed schedule for testing, since judgments about readiness are left to the individual and/or his tutor. A student can take a test on any unit, any time from eight to five; appointments are desirable since they give the student a reservation, but they are not necessary. The results of the tests will be available for immediate follow-up guidance or counseling. As we noted above, demonstrated mastery will result in continuation of the Instructional Program cycle, recording mastery of the unit completed and selection of another. If the results are below criterion, the student will be counseled about identifying the problem and working out a solution. Again, the established occasion for counseling is somewhat arbitrary (the "problem" may be simply a student's impatience); but again, if the

counseling procedures are reasonable (the "solution" may be simply a careful review of the unit), then the general rule will guard against prolonged or repeated difficulties. In identifying the problem, counselors will not quickly assume that the fault lies with the student (the unit may not be effective, the test may be poorly constructed or inappropriate); all dimensions of the apparent problem will be explored, both for benefit to the student and benefit to the system. In seeking a solution, there will be no group "remediation" (i.e., no separate instructional programs, under special aegis, that label the participants as "problem students.") Every problem is essentially an individual's, and must be approached individually. For this reason, counseling represents a large portion of the operational support.

We turn now to the Job Program. Like the Instructional Program, the Job Program is cyclical--job placement leads to work performance, which leads to remuneration and evaluation, which, sooner or later, leads to new and/or better job placement. The cycle from one job placement to the next will be, of course, longer than the average two week cycle from one curriculum unit to the next.

In following the student through the Job Program cycle, we begin with job placement. It is assumed that every student will have a job, but this assumption will not be required in practice--the system can function without every student working, and, more important, student participation will be voluntary. (The assumption that every student will have a job is used as a basis for planning, primarily to establish the outside limits for supervisory levels and cost estimates.) Job placement processes are initiated whenever a student wants to begin working or change jobs. Students will be applying for jobs rather than for general employment--the emphasis is on student choice, rather than an administrator determining what is "best" for him. An inventory of job openings will be maintained and publicized; every job in the school is potentially open to every student. Jobs will have prerequisites, so a student may not always qualify for the job he wants, but, since the means for becoming qualified will be both explicit and assessable, he can qualify himself if he is sufficiently attracted to the job.

A change in job will be reflected in a student's work history record, which is maintained for all students as the basis for checking student job qualifications, administering payroll, and evaluating the Job Program. This record will parallel a student's history of curriculum mastery; together, they will constitute the formal record that he compiles at the school.

Placement naturally leads to the job performance phase, where students, under faculty supervision, perform the various functions of school operation, organized as Instructional, Instruction Support, and General Support services.

Instructional Services are organized by curriculum content areas: In the structured curriculum, students perform as tutors, tutoring supervisors, and curriculum counselors (to provide assistance in independent study), and as laboratory assistants and supervisors; in the open-ended curriculum, students perform as group study leaders.

Instruction Support Services include testing, guidance, and counseling. In testing and guidance, students will perform the primary functions of administering tests and assisting other students in their selection of a curriculum program; in counseling, students will perform as assistants to the faculty counselors.

General Support Services include:

- Child Care
- Food Services
- Data Processing
- Secretarial
- Communications
- Audio-Visual and Duplication
- Library and Materials
- Custodial and Grounds
- Maintenance and Repair
- Receiving and Stores
- Personnel and Administration

In all areas students will perform the tasks that are required by each of these services. The only exceptions will be those tasks that are legally restricted to licensed craftsmen; these tasks will be contracted to the district or commercial vendors.

Data on the performance of duties will be maintained. Work attendance records will serve as a basis for payroll administration, and performance assessments (by student and faculty supervisors) will serve as a basis for a student's job evaluation. Overall, the program is designed to encourage student job mobility--both in achieving better pay, and obtaining a substantively wide range of work experience. It will not be enough for the Job Program merely to sustain a smoothly running operation--that is one, but not the only measure of its effectiveness--it must, in the process, convey to the participants a sense of personal effectivity. System assessments of the Job Program (in general) and of the evaluation procedures (in particular) will emphasize both efficiency and effectivity.

System Overview

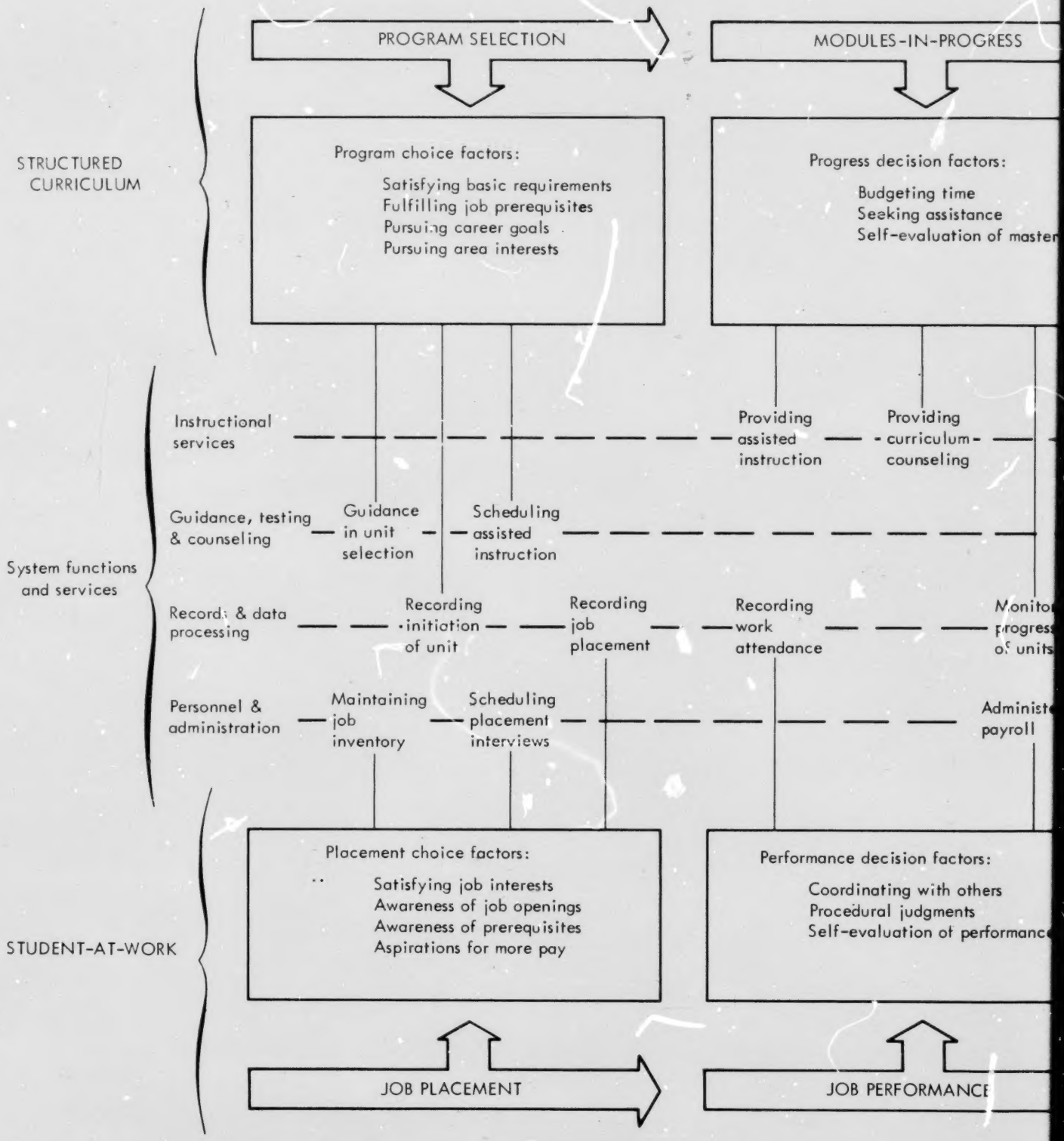
The interrelationships of the major programs, their components, and the operational support required for each, are best summarized in graphic form. This summary is presented in Figure 3.

Scheduling and Logistics

The operations of the school will obviously require sound planning and management--these are the "costs" of a design that is differentiated in function and open-ended in concept. Two aspects of this planning and management deserve special consideration: student program scheduling, and logistics feasibility.

Student Program Scheduling

Scheduling appears to be more of a problem at first glance than it will be in practice. It could appear to be a problem because, as administrators know, most flexible scheduling programs have experienced difficulty (at least initially),


PROGRAM SELECTION
MODULES-IN-PROGRESS
STRUCTURED CURRICULUM
Program choice factors:
Satisfying basic requirements
Fulfilling job prerequisites
Pursuing career goals
Pursuing area interests
Progress decision factors:
Budgeting time
Seeking assistance
Self-evaluation of master
Instructional services
Providing assisted instruction
Providing curriculum-counseling
Guidance, testing & counseling
Guidance in unit selection
Scheduling assisted instruction
System functions and services
Record: & data processing
Recording initiation of unit
Recording job placement
Recording work attendance
Monitor progress of units
Personnel & administration
Maintaining job inventory
Scheduling placement interviews
Administe payroll
STUDENT-AT-WORK
Placement choice factors:
Satisfying job interests
Awareness of job openings
Awareness of prerequisites
Aspirations for more pay
Performance decision factors:
Coordinating with others
Procedural judgments
Self-evaluation of performance
JOB PLACEMENT
JOB PERFORMANCE

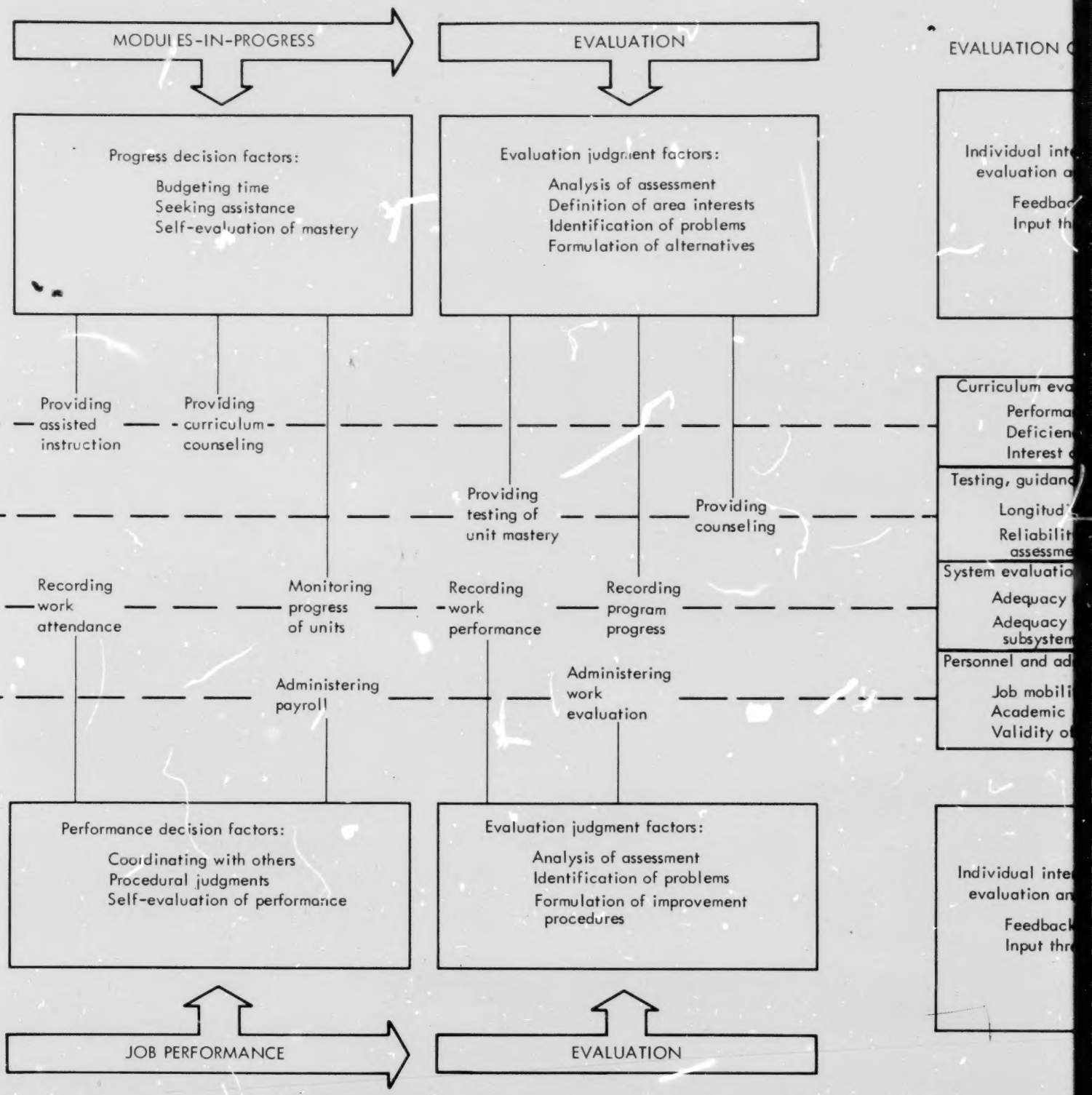


Figure 3. Overvi

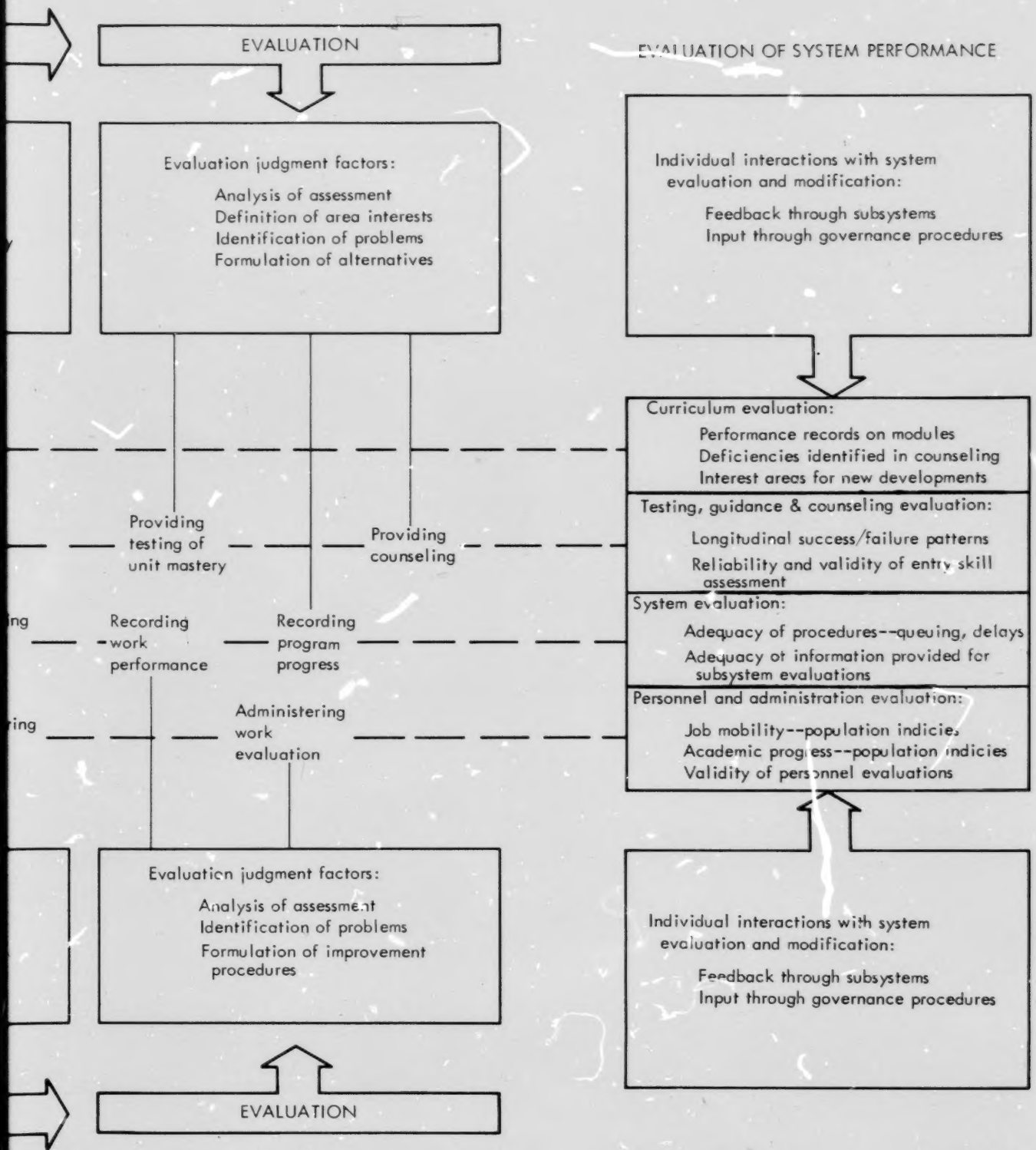


Figure 3. Overview of Operations

even with less ambitious programs than we have proposed. We expect to avoid the usual problems, not through some magical scheduling algorithm, but through a difference in scheduling concept. If one separates activity planning from attendance taking--so the process becomes student-, rather than administration-oriented--then the problem is reduced to manageable proportions.

In the New School, student program scheduling has different dimensions for different student levels. The distribution of student activities during the school day has characteristic differences for levels K-2, 3-4, 5-8, 9-10, and 11-12, as illustrated in Figure 4.

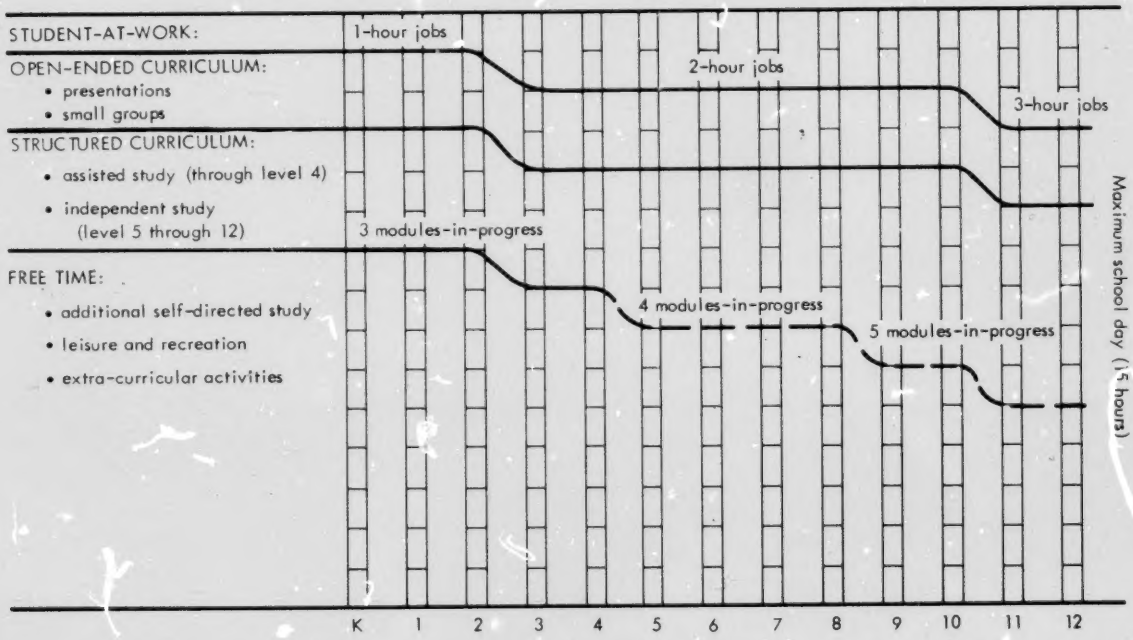


Figure 4. Average Distribution of Student Activities During School Day

In planning his activities, the student (or those who are assisting him) must be concerned with priorities. A student's job always has scheduling precedence; it is scheduled first. The next priority is assisted instruction. For each unit-in-progress, the student meets each day with the tutor at a prearranged time. The arrangement is made, with guidance staff assistance, when the student begins the unit. Assistance in each unit is offered six different times during the day, so there will be latitude in making the arrangement. (If a student has matriculated to independent study, this priority drops out.) The next priority in scheduling is presentation. Four presentations are offered weekly, and each is given twice. The student selects three. He is guaranteed the scheduling of presentations of his choice, since they never conflict with assisted instruction, and the second presentation of each is temporally arranged so that job hours can never preempt both presentations. The next scheduling priority is small group study. Small group sessions are offered seven times a day, four days a week The student schedules himself into three sessions of the possible twenty-eight. The final scheduling priority is independent study--the student can study independently any time he has nothing else scheduled.

To illustrate the scheduling process, we have selected an example from the K-2 range (Figure 5).

The illustration reveals one scheduling variant not yet discussed. Testing, guidance, and counseling will be scheduled as needed; since each of these is offered from eight to five daily, even the busiest schedule can be accommodated.

The other patterns of scheduling priorities are illustrated in the Appendix.

The actual scheduling process that we propose is a direct analogue of the illustration, namely, that a student use acetate overlays, literally putting together his schedule by superimposing (in priority order) the sheets corresponding to his job (changing only when he changes jobs), assisted instruction (changing only when he begins a new unit), and selected activities (changing weekly). This procedure is simple and effective, since potential conflicts will become immediately apparent.

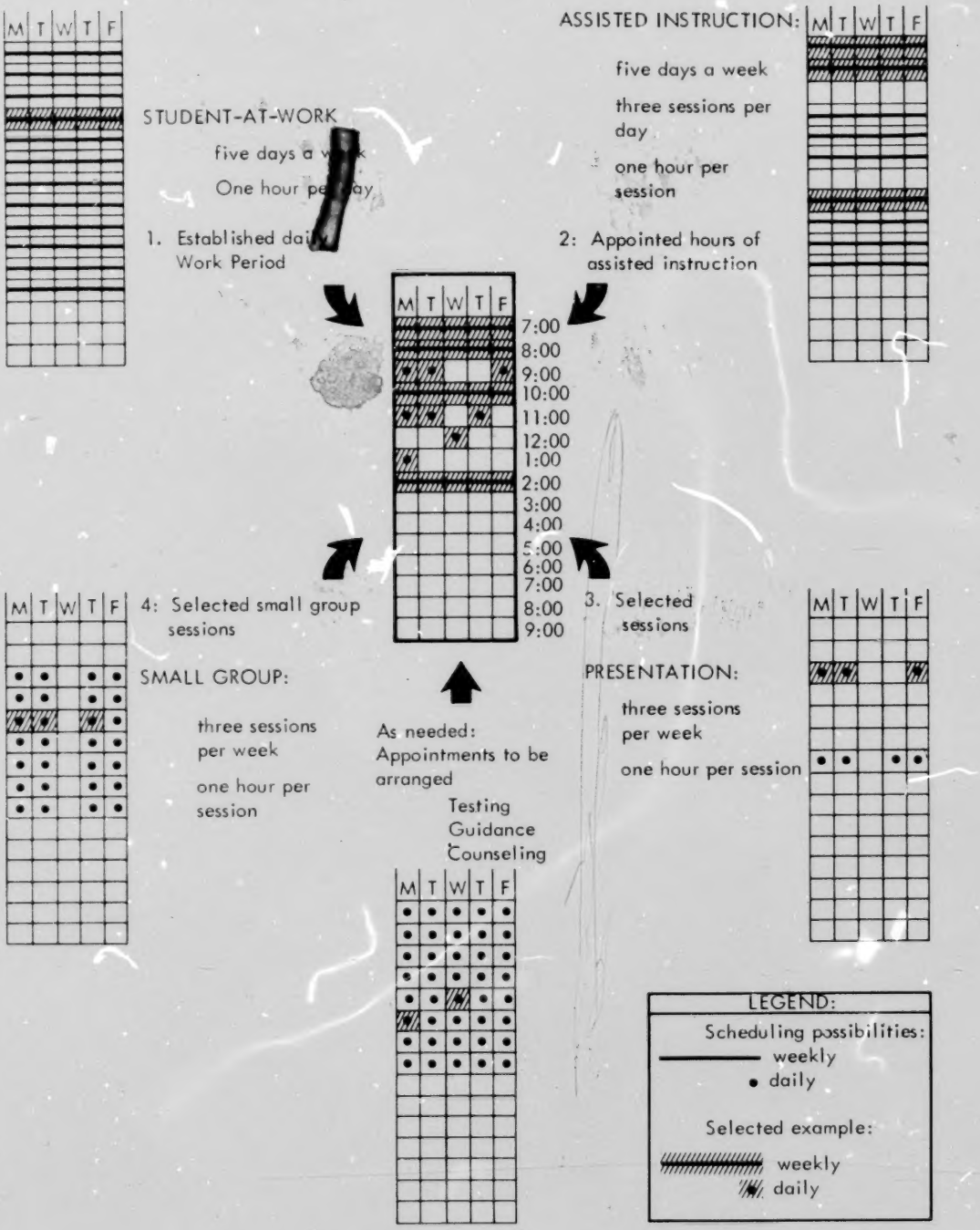


Figure 5. Schematic of Student Scheduling Sequence and Options

Logistics

The planning for the school must be unusually sensitive to the problem of logistics. The design, with its open-endedness and provisions for student independence, poses many questions of capacity and supply adequacy that cannot be effectively resolved without some form of dynamic evaluation. The major parameters in the design have been tested by computer simulation techniques.

To provide the necessary vehicle for the simulation tests, the New School was analytically modeled according to preliminary design specifications. The formulation of the computer model was based on an SDC-developed program, EDSIM, which had been used previously in the evaluation of schools using continuous progress instruction and flexible scheduling.*

Description. The program simulated the essential functions of the New School operations: weekly scheduling into "set time" activities (jobs, presentations, small groups, and tutored instruction); daily scheduling into "free time" activities (self-directed study, meals, recreation, and leisure); and in-progress scheduling into "demand" activities (testing, counseling, and guidance). These scheduling procedures, together with attendance settings (presence or absence, and hours attended for each student daily), provided the framework for simulating school operations. The scheduling procedures reflect the patterns illustrated schematically in the Appendix.

Within this framework, the major program parameters were set according to the preliminary planning specifications: 2,600 students (distributed uniformly across thirteen grade levels); 1,000 curriculum units in the structured curriculum (distributed across grade levels and subject areas, with 310 units characterized as assisted instruction, and the remaining 690 characterized as independent study); 24 lecture/presentations weekly (four lectures at three levels with each repeated once within the week); 672 small group sessions weekly (twenty-four small group meetings each hour, seven hours a day, four

*See Donald G. Marsh, "The New School Simulation Program: Specifications and Technical Description," TM-4610, System Development Corporation, Santa Monica, 1970.

days a week); and 2,765 student jobs (including 441 student tutors, 106 independent study counselors, 69 laboratory supervisors, 42 group leaders, 56 test administrators, 56 guidance assistants, 28 counseling assistants, and 1,972 jobs distributed across the eleven areas of General Support Services). These parameter settings reflect the scheduling and job allocations summarized in the Appendix.

Each student was characterized in terms of an individual activity schedule (filled in at the beginning of the week and modified on demand); an individual profile of progress in the various areas of the structured curriculum (initiated at the beginning of the simulation and updated as units were completed); and an individual job assignment characterized in terms of work area and hours scheduled. In addition, students who were being tutored also carried the scheduled hour of instruction for each unit-in-progress. The program operated on a one-hour time module (i.e., each simulated hour, each student "went to" the activity he had scheduled); and in-process decisions and changes (e.g., "demand" scheduling) were made on an hourly basis.

From an individual student perspective, records were maintained on attendance at each type of activity, and on progress in the structured curriculum (current units-in-progress as well as a history of completed units). From a system perspective, records were maintained on the hourly attendance levels of each activity in the school program. The reports generated were comparable to those specified for actual operations, namely, job history records, curriculum history records, attendance records for individual students, curriculum unit performance records, and activity attendance records for the various system components.

Rationale. The simulation vehicle was used to make a preliminary evaluation of scheduling procedures and facility capacities. This type of evaluation is appropriate because so many aspects of the program are not under direct management control. The "presentation" program, for instance, has an essential element of student option; attendance at a given presentation, therefore, cannot be exactly determined or controlled; this, in turn, makes it difficult to evaluate

the adequacy of planned facility capacities. And this is only one component in a system that is characterized throughout by option and choice: the student has a "menu" of presentations and small group meetings, which will change rather frequently; he has a "network" of structured curriculum units, which themselves are relatively stable but whose potentialities change with student progress; and he has a number of scheduling choices concerning independent study, meals, leisure, recreation, and so on. From the standpoint of scheduling, these choices and options are obviously perturbing, and it is difficult to assess whether or not the initial planning algorithms, procedures, and capacities are sufficient to handle these perturbations, without the sort of dynamic evaluation that simulation offers.

There are, of course, other sorts of perturbations that we cannot effectively assess at this time, because they cannot be accurately represented without empirical data that is not available. We cannot, for example, identify inadequate curriculum units, even though we can reasonably assume that there will be some in the system. The mechanisms of the simulation would have allowed us to represent such units, but their selection would have been wholly arbitrary, and, more important, their effects would have been to put less rather than more demands on scheduling procedures. In other words, the simulation was not, in all respects, veridical; it was intended primarily as an evaluation of scheduling and capacities, and, consistent with that intent, the arbitrating principle for decisions on implementation was the consideration of potential effects on target variables, rather than the achievement of an overdetermined semblance of "reality."

Results. The results of the simulation were encouraging. The scheduling procedures accommodated all student program demands, and none of the planned capacities were exceeded. More specifically, no tutor ever had more than four students for a given hour, and no student who selected a given assisted instruction unit ever failed to find a tutor available at a time that did not conflict with his job hours and other scheduled tutorial hours. No small group meeting exceeded ten participants, and yet no student was unable to schedule three

sessions a week, given his otherwise committed time, on this account. Attendance at presentations never exceeded the auditorium capacity. The fluctuating in-progress demand on testing and guidance facilities did not exceed the planned capacities. Generally, no student was excluded from a chosen activity on account of scheduling conflict or planned facility capacity. Significantly, the outcome could have been different. The analytic model was purposely open-ended in two respects: activity levels were merely recorded, rather than governed by an upper limit; and student program demands were generated independently of scheduling procedures, which were programmed to accumulate conflicts rather than force resolution by fiat. Thus, capacities could have been exceeded and scheduling procedures could have produced conflict, but neither occurred.

The reassurance suggested by these results is necessarily limited, because the results are based on the general assumption that things will go according to plan, and this general assumption, in turn, rests on specific judgments and estimates which may in fact be inaccurate. We may, for example, be unwarranted in assuming that criterion testing will average about one hour, that one-half hour is adequate for meals, that curriculum guidance can normally be accomplished in the allotted thirty minutes, or that students will not be too much rushed with an allowance of ten minutes for movement between activities. While none of these assumptions appears to be unreasonable, and while many are within our control (e.g., the length of testing), they are, nonetheless, variable factors of operations which have not been empirically evaluated for this analysis. The reassurance, then, is conditional; but even so, it is evidence that the preliminary planning is, on its own terms, logistically sound.

Summary. The preliminary evaluation produced by the simulation will be continually subject to updating during the progressive implementation of the design. In other words, the computer program itself is an important product of this initial stage of the New School development, since it provides a general tool that will be used not only for subsequent evaluation, but also as a vehicle for the man-machine simulations which are planned as part of the preservice training for staff and students.

COMMUNITY

The operational specifications for the school-community relationship are among the most contingent and uncertain of any set of specifications in the design, for two reasons. First, the particular needs, temperament, history of organization, and styles of political and social participation of a given community will greatly influence the possibilities for meeting "optimum" specifications for the relationship. Until we have selected a specific locale for the New School, therefore, predictions about this relationship cannot be made with high confidence. Second, the specifications outlined in this design are intended primarily as suggestions to the community, which it may supplement, amend, or reject, as it sees fit. If there is to be full community participation in school affairs, it follows that the form and substance of such participation must be matters for community decision. The approach put forward here is therefore to be understood essentially as a set of recommendations for community consideration.

Community Organization

Community organizations take widely varying forms, and we cannot predict what organizational principles and procedures will prove most attractive to the New School community. It is possible that a highly informal and unstructured organization will seem most appropriate. If, on the other hand, the community should seek a relatively sophisticated organizational format, then one attractive model may be that of the nonprofit community development corporation. Such a corporation would in this case be restricted by charter to activities directly benefitting the New School, and would constitute itself a Community Educational Development Corporation (CEDC). The corporation could enter into legally binding agreements, qualify for low-interest government loans, benefit from a favorable tax position, solicit contributions and other support from the larger urban community, and sustain the formal organizational structure required for the maintenance of stability and continuity, as student and parent generations changed. Three desirable organizational principles for the CEDC come to mind:

1) Membership would be restricted to the parents of present and former students, plus a "general membership" category for other community participants.

2) All categories of members would have voting rights (for election of board members, ratification of executive decisions), but parents of students in the school would have weighted votes in order to give them the strongest voice in community decisions.

3) Students and teachers would sit as nonvoting members of the CEDC executive board.

Voting members of the corporation would pay nominal dues, to be used in support of various corporation activities (information dissemination, office expenses, etc). The payment of dues would be important in principle as well as necessary in practice. It would constitute a tangible "inconvenience" in support of the general welfare of the community, and a reminder of the importance of exercising the privileges pertaining to corporate membership.

Should the community require assistance in the creation of a viable organization, a full-time organizational effort should be mounted, directed by an experienced community organizer (preferably someone from the community), assisted by paid community staff. This effort should be financially and philosophically independent of the balance of the school implementation project: In any close working relationship of the kind contemplated here, effective cooperation will be enhanced if each party perceives itself as a strong and autonomous entity, dealing with others from a position of independence and equality. Should either party to such a relationship feel weak and vulnerable to pressure from the other, the relationship will be in danger of becoming distorted, and cooperation subverted, as the weaker party bends its energies to the achievement of sufficient strength and independence to assure it a position of relative equality. If, in the relationship between school and community, the community is in fact to be a strong and independent entity, its formative organizational stages must be free of all suspicion and/or possibility of co-optation by school implementation managers. The community organizer and his staff must have the freedom to truly represent the community and its desires, and to place themselves in opposition to

the desires of school implementation managers if that becomes necessary. Thus, salaries and overhead costs for the community organization effort should be independent of the funding established for the balance of the school implementation project. If independent funding sources are not available, school implementation managers themselves could set aside the necessary resources at the outset, with funds placed under the control of a neutral third party, whose role would essentially be that of a trustee. This would guarantee continuity and independence for the community organization effort, while preserving necessary financial accountability and controls.

Participation in Final Design Studies

The present design is preliminary in nature; many details remain to be worked out. A great deal will depend on factors now difficult to predict, such as locale, site size, student characteristics, staff availability, and financial resources. Final details should not be worked out by professionals and then "submitted" to the community for its approval; community representatives should participate fully, from the earliest practicable date, in discussions related to final design features, so that community needs can be taken into account from the outset. As a mechanism for ensuring community planning participation, we suggest the creation of a joint professional-community planning committee. This committee would meet regularly to consider school design details, and would establish working procedures for ensuring full consideration of community views. Working quarters for the committee should be a planning office established in the community. The office could also be used as headquarters for community organization and information dissemination efforts.

Responsibilities

The community will be asked to assume the following responsibilities in support of the New School:

1) Contribute practical and professional teaching and training talent. In most communities, there are wide backgrounds of life and work experience which can be shared with students. Various trade, craft,

or professional specialties could be the subject of special lectures, discussion groups, or courses, conducted by members of the immediate or larger urban community. This assistance will contribute to student formulation of desirable career models, and provide access to a richer curriculum than could otherwise be provided.

2) Make regular assessments of school plant condition, and contribute to upgrading and maintenance. The school should be a center of community activity and a source of community pride. There is no reason why any community should wait for "normal" maintenance and upgrading of their school, if conditions suggest earlier intervention. Community craftsmen will often possess the necessary skills for repair and improvement of most facilities; materials could be purchased by the school district or donated by local merchants and businessmen.

3) Assist with normal and special school safety and security duties. School security--freedom from disturbance, vandalism, theft, extortion, narcotics peddling, etc.--is a serious problem primarily in schools that treat communities as adversaries, and house alienated and angry students. Security is preeminently a function of the social order, and of an unwritten but powerful consensus regarding standards of behavior; where extra precautions are appropriate, the heaviest responsibility for their implementation should fall on students and parents themselves. The community will be more effective in disciplining its own, and has the greatest stake in a safe and secure school.

4) Participate in counseling and guidance activities. Parents who do not understand the academic career and assistance requirements of their children will be in a poor position to render sympathetic guidance. School guidance counselors who have no knowledge of a student's home environment, or his parents' attitudes, will be poorly prepared to give sound advice.

5) Organize extracurricular social and recreational activities. Academic and cultural activities define the principle reason for a school's existence; extracurricular activities (sports, dances, etc.) are important to students, and deserve the support of school staff, but should essentially be organized by the community, thereby relieving school staff time for work in essential academic and guidance areas. Since it is often the extracurricular activities that are the source of the greatest community interest (and anxiety), this seems a doubly useful division of labor.

6) Assume direct responsibilities for student welfare. A community's children are its most precious resource; every effort should be expended to ensure that any student who gets into trouble will have a specific adult sponsor available to whom he can turn for help. To

this end, "clusters" of students (perhaps 20 to a cluster) will each be assigned to responsible adults, whose duty it will be to know the problems of the students in their cluster, to be available by telephone 24 hours a day, and to be familiar with basic procedures for handling common emergencies. In this way, every student should have at least one adult to whom he can turn for assistance or advice at any time.

7) Provide a Special Resource Committee for assistance with difficult problems. When a problem comes up that cannot be handled by a "cluster sponsor," he must have recourse to more varied and powerful community resources. The Committee will obtain access in depth to the resources of the city, including medical and legal aid, and will make special ongoing efforts in the areas of narcotics control and early treatment, juvenile probation cases, venereal disease problems, school dropouts, and counseling about military service.

8) Participate in pre- and in-service training for school staff. Part of this training will be devoted to an understanding of community needs and views. This understanding cannot be acquired at a distance; community participation will be required.

9) Participate in parent training classes. Parent "training" here refers to a broad range of subject matter. At one end of the scale, classes will be organized for the purpose of helping parents understand the problems of young people, in order that their assistance to their children will be sensitive to the school's program of promoting individual initiative and self-direction. In another vein, parents will attend classes dealing with medical and legal problems--how to recognize them and cope with them, how to deal with emergencies, etc.

10) Prepare a community newsletter. The community will write and distribute a regular newsletter to all parents, informing them of school and community activities, and providing a forum for the discussion of issues and ideas.

11) Assist with Parents' Manual. School staff will ask for community assistance with preparation of the Manual, which will contain basic information on the New School, tell parents what steps to take in order to acquire further information or deal with common problems, describe the community organization and its activities, etc.

12) Participate in student "follow-up" programs. The New School will provide continuous counseling and guidance services to its graduates; parallel community efforts will be requested as part of the procedure of keeping track of former students, and helping them with college or work careers.

Entitlements

The managers and staff of the New School will assume that the community has the following fundamental rights:

1) Final approval of school principal. The principal is preeminently the senior authority and last "court of appeal" for most problems. His office is both symbolic and administrative. He "stands for" the school and must be more sensitive than anyone else to the proper balance of school-community functions and activities. In a sense, he must have one foot in the community and one in the school. It follows that he should be as acceptable to the community as he is to the staff of the school and the district administration, and the community will therefore have the right, by vote of two-thirds of the parents, to disapprove his appointment.

2) Staff selection and transfer procedures. Members of the community will sit as nonvoting members of staff selection boards, to ensure that community views are adequately represented and that selection criteria reflect community desires wherever possible. On rare occasions, friction between the community and a staff member will make his position untenable. In the New School, a staff member can be reassigned to an area where the occasions for friction will be reduced, and his value to the educational program as a whole need not be eroded. Alternatively, in severe cases, it may be best for the staff member to transfer to a different school. This is considered an unlikely contingency, but one that is best faced early rather than late. Since a request for activating either of these alternatives would be a serious matter for the staff member concerned, but is nevertheless a right that should reside with the community, a two-thirds parent vote will be required to initiate action, carefully specified grievance procedures will have to be followed before a decision can be made, and review and appeals procedures will be established to fully protect the rights of the staff and members of the community.

3) Participation in curriculum selection. Members of the community will have the right to sit on curriculum review and selection committees, and participate fully in their discussions. It is not expected that, with regard to the specific content or format of structured curriculum materials, the views of community representatives would ordinarily take precedence over the judgment of professionals. However, community views should be strongly represented in discussions dealing with general subject areas that are considered desirable additions to the structured curriculum, and in discussions of open-ended curriculum options.

4) Open access to facilities. There is no reason why parents and other members of the community should not be able to attend presentations and discussion groups, use creative arts and recreational facilities, and in general avail themselves of school resources, subject only to normal student priorities. To facilitate this participation, the community will be provided with schedules of school activities.

5) Access to administration. Community representatives will be guaranteed access to all levels of school administration. The preferred mode for this procedure will be informal; if a problem comes up, a community representative will be welcome to drop in on staff or management to talk it over. More formal meetings will also be scheduled on a regular basis, to insure full communication at all times.

6) Staff participation in community planning. The community organization, or perhaps small parent groups, may wish to meet in order to consider problems relevant to the welfare of the community--traffic, housing, jobs, health, public safety, etc. Or they may meet to plan community recreational activities. For either purpose, they will be able to call on school staff and managers for technical advice and assistance. This is simply the concept of "responsibility" in reverse; here the staff's responsibility to the community becomes the community's right.

7) Staff accountability to community. The community organization, at its regular meetings, may schedule as an agenda item a report to the community by the New School principal and/or members of his staff. School staff, including students, will also be available for discussion at these times, and will be prepared to explain school policy or activities in response to questions from parents. These reports will supplement continuing informal accountability arrangements.

8) Adult education. As part of the school's 15-hour day, arrangments will be made for holding courses, credit and noncredit, on campus, in basic and advanced adult education and training. Curriculum will be decided on in consultation with interested members of the community.

School Facility Support

In support of the school-community relations outlined here, school materiel, staff, and facilities will be available to the community:

1) A private office, with telephone and secretarial assistance, for a designated community representative, located in the vicinity of staff, administration, and student government offices.

2) A community room, with basic furnishings, available exclusively to the community at all times for purposes of its own choosing.

3) Printing facilities and assistance for the community newsletter.

4) School "outreach" programs, bringing staff to homes or other meeting places in the community for counseling and guidance activities and selected educational programs.

5) A "drop-in" room, or "crash-pad," for student emergencies. This room could be manned on a 24-hour basis by a mixed staff of senior student leaders, social agency volunteers, school staff, and community volunteers. It would be a place to go for "kids on the run"--students in trouble, on the street. Staff would have access to the community's Special Resource Committee and to professional guidance and counseling assistance.

6) Distribution to students of community emergency phone numbers and locations. The school will issue wallet-size plastic cards to students, listing phone numbers and, where appropriate, locations for cluster sponsors, Special Resource Committee members, the "drop-in" room, and key school staff members. Basic student identification and pertinent medical information (blood-type, etc.) will also be printed on the cards. For very young children, wrist bracelets or neck chain tags will be issued to assist authorities in case of accident. If a student gets into trouble, of whatever kind, a network of community support and assistance should be instantly available to him. The cards and tags should help place such assistance no further away than one or two phone calls.

GOVERNANCE

Specifications for governance pertain essentially to arrangements for the division of authority and responsibility; rule making and rule enforcement; and school security. As with the preceding section on "community," these specifications should be considered highly tentative, subject to ratification or revision in this case by all those who will participate in the detailing of the final design of the school--students, staff, community, and administrators.

We do not believe it would be helpful, at this stage of the planning process, to attempt a full-blown delineation of proposed rules and regulations for the New School. Governance arrangements will be essentially a matter of agreement among the school's constituent groups, and will not require long lead times for implementation. In this sense, they differ from arrangements that are more dependent on technical preparation, such as plant construction or curriculum development. They are an aspect of school design where we can afford the luxury of waiting until quite late before agreeing on details. Accordingly, the present discussion is cast in terms of general policy recommendations, and during the period immediately preceding the opening of the school, we hope to bring together representatives from the host school district, school administration, faculty, students, and community, in order to derive a set of more specific agreements. Prior to these meetings, there will have been ample time for implementation managers to discuss problems of governance on a more informal basis with each of the groups concerned, and this opportunity will be counted on to help the more structured discussions proceed from recognized common ground to an agreement on broad principles and essential rules. This agreement should be expanded and confirmed during the first months of school operation, and reviewed periodically thereafter (we discuss procedures for such review below).

We would suggest the following broad guidelines for the framing of more extensive and detailed governance agreements:

Self-government as a Basic Principle

If we wish to instruct students in the difficulties of self-government, and acquaint them with the problems of effecting change in a representative democracy, we should support their practice of self-government at school; if we wish to instruct them in the virtues of self-government, our recommendations are far more likely to be taken seriously if we practice what we preach. One of the most important things a student can learn by the time he graduates is the responsible exercise of citizenship--the "rules of the game," and the techniques for achieving his objectives without breaking those rules. Educationally, then, self-government is a requirement that extends beyond theory. We also believe it can be the most effective method of school governance. Rules and regulations that are derived hierarchically, rather than democratically, no matter how sound, will always be in danger of being considered arbitrary and unjust. Ultimately, their effectivity rests, not on concensus regarding their utility, but on the threat or use of penalty and coercion. In this vein, we believe that the present crisis of authority in many schools is in fact a crisis of legitimacy--and we know of no more effective antidote to this problem than the exercise of self-government. In a society where law derives its legitimacy--its claim to be obeyed--from its origins in a process that is representative, deliberative, and open to public scrutiny (rather than arbitrary and secret), it may be wise to apply these principles of democratic government to schools as well. The argument for real school self-government is not an argument against recourse to sanctions against lawbreakers; as in the case of society at large, school law would rest not only on legitimacy, but on the availability of penalties where necessary. It is an argument against depending primarily on the threat of penalty, rather than relying chiefly on the force of legitimacy and social consensus.

Jurisdictions: The Apportionment of Authority

We take it as axiomatic that responsibility and authority go hand in hand; that where ultimate responsibility lies, so there must ultimate authority reside. At the same time, there are bound to be competing claims to authority among the

school's constituent groups: students, faculty, community, school managers, and the district (the school board and its staff). Too, the very notion of divided authority seems at first glance incompatible with the basic principle of self-government. However, we believe that both potential difficulties can be overcome: competing claims to authority can be satisfied without forcing a separation of authority and responsibility, and self-government at school can coexist with a higher authority outside of the school's proximate jurisdiction, without serious compromise of principle.

First, it is important to distinguish between ultimate authority, which can in practice remain largely residual and unexercised, and operational authority, which in the formal sense may be exercised in trust or by delegation, but in the practical sense amounts to a day-to-day responsibility for rule interpretation and implementation. Thus, a school board, charged with the ultimate responsibility for education in a district, may retain the authority to decide specific details of educational policy (e.g., classroom methods, teaching assignments, etc.); its delegation of most of that authority to professional staff (and the further delegation to other groups) is not a dilution of authority, but an act of conservation, since an attempt to make decisions at a very fine level of detail would interfere with the board's capacity to agree on more fundamental policy directives. In the same way, school self-government is possible on a practical, operational basis, for it can deal with day-to-day problems of campus activity without conflicting with decision-making rights that may be formally reserved for, but not exercised by, authorities outside the immediate province of the school.

We should also recognize the highly complex nature of relationships among the constituent groups named. Their interests differ, not so much in terms of ultimate objectives, but in terms of preferred emphases and priorities. (Nor should priorities be expected to remain fixed or static; they will shift as relationships and events dictate.) In addition, each of the constituent groups has a different basis of legitimacy and authority--legal, moral, political, or professional--and they will not deal with one another on the basis of uniform

norms of behavior or common criteria for procedure. Thus, the community might deal with school managers as a client would deal with a professional advisor, or as taxpayers with public servants, but school managers might deal with school faculty on a more formal, hierarchical basis, having to do with recognized canons of professional conduct together with elements of an employer-employee relationship. It makes little sense, therefore, to consider competing claims to authority as a struggle for a fixed and monolithic objective. The relationship among constituent groups does not resemble a constant-sum game; different priorities, different bases of legitimacy, and different operational styles will make for a highly differentiated combination of competition and cooperation, in which room should exist to satisfy most groups most of the time.

Finally, authority takes so many forms that it soon becomes an inadequate concept for describing the rights that constituent groups may have. Thus, there will be the right to originate policy, to direct others in policy implementation, to suggest policy (the right to a hearing is by no means trivial), to consult with others, or be assured that others will consult with you, to veto selected decisions, to initiate procedures for revising policy, and so on.

In the sections that follow, we propose broad jurisdictional prerogatives for each of the constituent groups.

Students

It is with students that the principle of school self-government should become operative; student government should be real government, dealing with the essential issues of student behavior. Students should be charged with drafting such school rules and regulations ("codes of conduct") as they consider desirable; they should be charged with the ratification of such a code, and with its enforcement. They will be asked to begin this process in the months immediately preceding the opening of school, and will be encouraged to continue once school has begun. The usual objection to real student self-government is that students are immature, or potentially irresponsible--that they will ignore some rules

that are desirable, and make others that are not. This may be. Our legislatures do no less; it seems to us somewhat arbitrary to expect students to do more. We believe that many notions about the "desirability" of rules are derived almost exclusively from administrative convenience, and that it would be preferable for those who are asked to abide by rules to have an opportunity to create or ratify them. Rules drawn in this way are far more likely to be obeyed. At the same time, it is clear that there must be some limits on student authority, just as there are limits on the authority of other rule-making groups, legislative or bureaucratic. The analogue is deliberate: Limits on the exercise of student self-government will resemble those that apply to their adult contemporaries:

1) They will make no rules that are patently illegal (nor can a board of education, or a state legislature).

2) They will make no rules that clearly conflict with regulations mandated by a broader level of authority (in jurisdictional conflicts, state laws take precedence over local, federal over state, district over school).

3) Their rules will be subject to interpretation in light of these standards (designated faculty and the school principal will perform a function equivalent to court review, but, like the courts, will justify any opposition to student regulations by reference to higher law, rather than by simple recourse to administrative fiat).

4) Their rules will be open to review, amendment, and repeal (anyone who is affected by the rules, from student to principal, will be able to initiate the process).

Within the territory bounded by these constraints, there is ample room for the exercise of operational authority over the daily aspects of campus conduct. However, let us be clear: students will make mistakes. They will favor arrangements that are less than optimum from the points of view of school managers, the district, or the community. And their tastes will differ from those of their elders. The test of student government, however, should not be some paradigm of administrative rationality, nor the preferences of faculty and school managers, but the quality of the school social order that results, and the education of the students who participate.

Faculty

We have referred to the inseperability of authority and responsibility; this principle should see one of its most important applications in the area of faculty prerogatives. In a school where faculty have heavy professional responsibilities--are answerable for curriculum content, training, and operations management--they must also have the authority to meet those responsibilities as their judgments dictate. Our model of school administration is collegial and consultative rather than hierarchical; decisions regarding curriculum content and presentation, school resource allocation, plant use in daily operations, staff assignments and related matters must essentially be faculty decisions. Depending on the issue at hand, these decisions can be informal or not; taken singly or in concert with colleagues; made on the basis of faculty-wide consensus or in the exercise of a prior delegation of faculty authority. These matters are left for faculty decision.

In addition, one member of the faculty will have special responsibilities related to student self-government. He will have skills that are both practical and pedagogical, placing him partly on the Instructional Services faculty, and partly on the faculty for General Support. It will be his job to devise curriculum dealing with the theory of governance (and related subjects broadly in the area of political science); he will also be responsible for training and supervising students in the practical arts of self-government. It will be his responsibility to make the connection--both intellectually and operationally--between theory and practice. Thus, he will be theorist and pedagogue, but also advisor, and, excepting only the school principal himself, court of last resort and final "civil authority" in the school. His student assistants will in this case be the officers of the student government; they will receive paraprofessional wages for their work as tutors in political science subjects (and presumably could hold forth their alleged expertise in these matters as one qualification for public office). This faculty member, officers and designees of the student government, and the principal of the school will have sole responsibility for the order and security of the campus; no similar duties will obtain for any other member of the faculty, whose roles will be restricted to those tasks dictated by their professional skills and concerns.

School Managers

In the New School, the principal and his immediate staff should perform five essential functions:

1) As managers, they should be technocrats in the best meaning of that term; technical trouble shooters with the skill to help solve problems that may arise due to rough spots in the operational plan, or in its implementation. Since no plan is perfect, and problems can be expected, this will be a critical function, but one that should not impinge unduly on faculty time.

2) The principal, in particular, should be the essential "contact point" between the school and other layers of bureaucracy and authority. Given the amount of faculty time that could otherwise be "wasted" in dealing with requests for visits, inquiries from other districts, routine district-level administrative matters, etc., this function will also facilitate the smooth functioning of the school's normal activities.

3) They should be senior colleagues to the faculty--knowledgeable and expert in relevant method and process, informal mediators of incipient disagreements over educational substance or procedure, and participants (but not directors) in faculty decisions regarding curriculum, resource allocation priorities, and operations.

4) They should be a formal board of appeal, performing the judicial function for the school, in unresolved disputes among faculty, among students, or between faculty and students.

5) Finally, they will have the legal mandate to be the holders of final authority (in the school) on all matters pertaining to school operations. They will have this authority as a matter of direction and trust from the board of education, and will exercise it only as a matter of last resort--if their delegation of its operational jurisdiction to faculty and students results in some fundamental breakdown of the educational or social order.

Community

Suggested community prerogatives have been spelled out in detail in the operational specifications section dealing with that subject, and we would reemphasize only the following points: The authority of the community should be essentially undiluted and complete in areas that are reserved for community action--the nature of the community organization, the extent of community participation in

school affairs, the form and scope of nonacademic extracurricular activities, the choice of adult education subjects, the extent of direct support given to students and alumni, etc. In addition, there should be three kinds of community prerogatives:

1) Participation: The right to be consulted on school policy, including staff selection and curriculum decisions; the right to be part of the counseling and guidance process; the right to approve district selection of the school principal.

2) Accountability: The right to access to administrators, formally and informally; the right to a regular accounting and review by students, faculty, and administration.

3) Grievance: The right to initiate complaints about the school, with the provision of formal channels and procedures for doing so; the right to initiate grievance proceedings against school personnel, subject to the agreement of two-thirds of the parents.

The prerogatives of the community, while substantial, would not in practice be exercised in such a way as to encourage the casual obstruction of normal school operations, or a frivolous charge against school staff. Established procedures for community participation, school accountability, and grievance hearings--procedures accounted for in advance as part of normal school operational planning--will eliminate most of the benefits that ordinarily accrue to the strategy of "random confrontation," where the community must count on the element of surprise as an assurance of access to school authorities.

District

We do not believe it would be either legally possible or practically wise for the district (elected officials and district managers) to alter the substance of the authority it now holds for initiating policy and directing school managers regarding policy implementation. What we suggest here is only that a district modify its style and mode for the exercise of that authority, in cases where the present mode would conflict with the jurisdictional prerogatives outlined above. What this means in essence is that the district must, and should, reserve the right to intervene, to withdraw its delegation of operational authority, and to

remove or replace those who are exercising that authority in the role of trustees. This conforms to standard practices and relationships. At the same time, however, we believe that the district should come to an understanding with community, school managers, and students, (1) that the prerogatives specified above will in fact be recognized or delegated, subject to the district's privilege of intervention or withdrawal, and (2) that the latter privilege would be exercised only in the most extreme case of educational failure or social disruption, and then only after allowing adequate opportunity for self-correction on the part of New School students, faculty, managers, and community. This would amount to a good faith assurance that, barring emergencies, the district would operate on the basis of a "hands off" policy, placing overall school objectives before traditional procedures, and demanding only a regular accounting that those objectives (educational, social, financial) have been met by the school. This policy would in no way dilute traditional district prerogatives, but would give the New School and its constituent groups the flexibility and room needed to give an innovative system and process a chance to succeed on its merits. Under the terms of such an understanding, for example, the district would, as usual, retain the right to review student-drawn codes of conduct, but might agree to apply only the test of formal legality in deciding whether any part of the code should be disallowed.

Procedure

Agreement on essential procedures should precede attempts to block out the substance of school governance policies, since specific policies may ultimately be found inadequate or inconvenient, and the creation of procedures for their review and alteration will remove the "urge to perfection" from substantive policy debates. Also, it will be manifestly impossible to meet all possible contingencies ahead of time, and some regulations may appear desirable on an experimental basis that would be risky as more or less permanent rules. Procedures for change should therefore be the first consideration of governance agreements. Accordingly, most of the balance of this chapter is taken up with a brief review of procedures that would be desirable in the New School; substantive detail--the precise nature of rules and regulations for governance--are left without prejudice to the students and faculty who will meet to consider available alternatives.

Without attempting to suggest detailed modalities, we believe the following procedures should be explicitly endorsed, and provisions for their implementation formally provided:

Consultation

For each school constituent group that originates policy, there should be explicit recognition of a requirement for consultation with other groups who may be affected by that policy, either during the policy deliberation process, or immediately preceding policy implementation. We expect that a great deal of this activity will take place informally, but procedures for more formal consultation should also be created and adhered to as a matter of normal practice. Thus, if school managers and faculty should contemplate a change in school scheduling practices, their technical deliberations, though open to others, might well be conducted in private; but their decisions should not ordinarily be implemented before they have formally consulted both students and community.

Initiation

Procedures must be created whereby any student, faculty member, or member of the community can initiate a request for a new policy, a request for changing existing policy, or some grievance against the operation of the system. Designated recipients for requests or complaints must be appointed and widely identified; specified procedures for follow-up and response must be agreed upon.

Appeal

Well understood appeal procedures will be important for student discipline actions, and particularly critical in the case of grievance procedures initiated against members of the staff or school management. Procedures for appeal will probably differ in detail depending on the substantive problem at issue, but in all cases should be highly explicit and strictly adhered to.

Mediation

One of the more important functions of the governance faculty member, and of the principal and his immediate staff, will be the mediation of incipient and actual disputes among or between the various school constituent groups (or members of those groups). The mediation process would be largely informal, flowing from the role to be played by these professionals as final courts of appeal and ultimate civil authority in the school. This would conform in most respects to the current practice of many school administrators, but we would also suggest a slightly more formal procedure, in which specified hours, locales, rules of behavior for opposing parties, and other trappings of more formal mediation efforts are instituted, in order to make a reliable process well known to parties in dispute who may wish to count on this assistance.

Review

Periodic, specified occasions should be provided for the review of school policies and the manner of their implementation. The style for these meetings should be up to the participants--all the school's constituent groups--but could be loosely structured series of small meetings rather than mass gatherings, in which little of substance can be usefully discussed. Whatever their structure, they must be designed to provide formal opportunities for the airing of complaints (especially for those who may not previously have taken advantage of other channels), the discussion of system change, and the public examination of suggestions for modifications in school operations.

Ratification

Finally, it is clear that student self-government in a school with 2,600 students will be representative government. Procedures for the expression of student opinion on a larger scale--both for choosing representatives and ratifying their decisions--will be required. Similarly, on issues of school-wide importance where policy recommendations have been initiated by faculty or school managers, provisions should be made for obtaining an expression of student or community

opinion, and policy implementation in some cases would be withheld pending ratification by groups to be affected.

Potential Problems

Whatever the design for governance, there will be areas where past experience gives cause for particular concern. We would argue, of course, that past experience will not be an adequate guide to predictions about relationships and behavior in the New School, where the design has eliminated many situations typically attended by a high incidence of rule infraction. Classroom discipline problems, for example, cannot exist without classrooms (and a restless student in a private room can disrupt only his immediate neighbors, who will then have some stake in seeing to it that he quiets down). If a student disrupts a small group session, his presence is not legally or administratively required; he can be asked to leave and not be readmitted. Nevertheless, some additional comments may be in order about problems that have seemed particularly worrisome to most observers.

Rule Enforcement

We are concerned here, not with gross violations of the public order (we address that issue below), but with the everyday process for enforcing rules and regulations. At issue, in part, is whether the requirement for maintaining the threat of sanctions will turn the governance of the school away from an open, flexible, and democratic system, to the embrace of more authoritarian procedures. The expectation that "self-made" rules are less likely to be violated is clearly not an adequate answer to the question of what happens if rules are broken. We would suggest a number of answers. First, we would endorse the stratagem of avoidance: The likelihood of confrontations over rule breaking will be substantially reduced if we begin by avoiding rigid definitions of what constitutes "misbehavior." We would suggest that actual rule making be kept to a minimum, and that only personal behavior which is harmful or offensive to others, clearly harmful to the individual concerned, illegal in the broader sense (of state law or local statute), or clearly disruptive of the educational system be categorized as "against the rules." Second, we would suggest that the random, occasional, or accidental

breaking of known rules is of little or no concern; what is at issue is the problem of the consistent violator. The system's first reaction to such a student should be clinical rather than punitive. His behavior should be treated as a sign of personal difficulty; he should be referred to counseling before he is "sent to court." If maladaptive behavior can be understood, and the reasons for it treated, its cessation is more likely to be permanent, and both the system and the student in question are more likely to benefit. Third, we would endorse the application of legitimate sanctions, meaning, (a) penalties for rule breaking that have received prior ratification by the student body, and are widely publicized; (b) penalties that are not arbitrary, but are appropriate to the offense, including known, ratified procedures for warnings, penalty hearings, and appeals; and (c) penalties that are implemented by students themselves. Finally, the consistent violation of a given rule by large numbers of students probably says more about the rule than it does about students; there should not be an automatic assumption that rule breaking is a sign of "bad behavior." It may be a sign of a bad rule.

There is of course one aspect of the rule enforcement problem that is unique to the New School: the potential misuse of private rooms. Essentially, the question is whether the provision of such rooms will cause an appreciable and intolerable increase in rule infraction, since they would appear to present new opportunities for "safe" illicit behavior. While there can be no doubt that the design provision for private rooms does present a new variant of the rule enforcement problem, we would also make the following points:

1) Illegal (or "undesirable") behavior is only in part a function of opportunity; otherwise, there might be a lot more such behavior than we ordinarily see.

2) Where opportunities for illegal behavior are sought, they will generally be found, whether or not they are explicitly provided. Concerns about this problem would have to be formulated largely on the basis of historical examples that did not include the availability of private rooms; the absence of such rooms has not prevented the behavior in question.

3) Given what is known about some of the causes of illegal behavior, we believe its incidence is more likely to be reduced than increased by the provision of private rooms and attendant student responsibility. Alternatively, if the message of the "system" to the student is, "We don't trust you," a hostile and angry response seems more predictable. We would not argue that a trusting adult will always raise an honest child; rather that the absence of trust is more likely to produce dishonesty and cynicism.

4) Undesirable and illegal student behavior is most often social, not private, in nature. Private rooms will have no effect on social behavior, except possibly to reduce the natural opportunities for its occurrence by providing an escape hatch for students who would really prefer not to join their fellows in some ill-advised adventure.

5) A major educational goal of the New School is the inculcation of self-discipline and the ability to work competently at one's own pace. Problems and failures are to be expected; this is perhaps the most difficult of all lessons to learn. Given the potential benefits that can accrue from the private rooms, however--not only in the exercise of self-discipline, but in the support of the school's individualized curriculum--some costs seem worth absorbing, and some risks are surely appropriate.

6) Some students will doubtless begin by testing the system, using their rooms for purposes other than study or reflection. This kind of behavior should drop noticeably once its novelty wears off, and should not be a permanent state of affairs.

7) Students themselves should be the best governors of student behavior; there is little reason to suppose that normal procedures for student self-government will not be adequate to deal with potential problems in this area.

On balance, while we do not believe that infractions of school regulations can ever be eliminated, we would hope that the combination of efforts to secure consensus regarding standards of behavior, and legitimacy for the application of penalties where required, will both keep infractions to a minimum and suffocate any temptation to seek more authoritarian solutions.

Security

Given the recent history and present condition of student disruptions of public order in the schools, we must consider how we would respond to such a contingency in the New School. In fact, we believe that severe disruptions occur primarily where students are not taken seriously, treated decently, or provided with sound educations. We do not expect this form of disturbance, because we believe the school and its programs will deal effectively with its root causes. If disruption on a large scale were to occur, we would take it as a probable sign of basic failure of the design; that is how we largely interpret the relationship of such disruptions to present urban school systems. Nevertheless, we do not underestimate the influence of factors beyond the control of the school in causing student anger and despair--conditions of life in the ghetto, for example--in which the school is merely the nearest and most vulnerable target for the venting of frustration and outrage. Nor do we discount the potential for trouble that resides in interschool athletic events or similar occasions. Given these possibilities, we know of no completely effective antidote, and must admit that the outcome will depend to a large extent on the quality of personal leadership displayed by student officers, by faculty and school managers, and by members of the community, upon whom we would rely heavily for assistance. Outcomes in such an eventuality will also depend greatly on circumstance, and we would counsel against the gratuitous exacerbation of a tense situation through the use of nonschool authorities, unless there is clearly no choice.

Community-Faculty Relations

One other focus of concern deals with the potential conflict of faculty and community prerogatives, especially the proposed right of the community to initiate transfer proceedings against a faculty member. This concern, also, has some recent historical precedent in severe faculty-community quarrels over just such issues. Our own analysis of these disputes pursuades us that at least three important conditions contribute to breakdowns in relations:

(1) The community is persuaded that its children are not being well educated, and are subject to arbitrary and prejudicial treatment; (2) the community is not invited to participate in school decisions, feels frozen out of the system, and is anxious to acquire and exercise power on its own behalf; and (3) there are no explicit agreements in force concerning procedures for the initiation, prosecution of, or appeal from complaints by the community, nor are there any agreements about jurisdictional prerogatives.

Faculty members who are caught in this web of circumstance often feel, doubtless with some justification, that community anger has become focused on teachers as the nearest and most conspicuous symbol of an unresponsive educational system that teachers themselves are essentially powerless to alter. Under these conditions, substantive issues tend to become distorted to the requirements of acquiring or maintaining power, and both sides move toward a confrontation that finally closes off any chance for a good faith resolution of differences.

In the New School design, we take steps to prevent the occurrence of all three conditions noted above. Steps related to the first two conditions are imbedded in the design itself, and have been discussed at length in this document. Should the community nevertheless be highly dissatisfied with a member of the faculty, all concerned parties would be well served by the existence of prior agreements about community prerogatives, grievance procedures, and possible outcomes. Such agreements would serve as a referent code of conduct that could prevent the initiation of a chain of events leading to a confrontation and a break in relations; they would also serve to protect the faculty member from arbitrary accusations to which he has no formal opportunity for response. We therefore view the provision of explicit grievance procedures, not as an interference with professional prerogatives (which will not deter an angry community from acting, in any case), but as an important safeguard <u>in the event</u> of trouble, both for the faculty member concerned, and for the system as a whole.

IMPLEMENTATION AND COSTS

Between this design and operational reality lies a complex and demanding task of implementation. Since we are, at this stage, dealing in estimates, approximations, and contingencies, any mapping of implementation is necessarily more schematic than definitive; nonetheless, we have drawn preliminary plans for development in terms of projected schedules and costs.

Implementation Schedule

The estimated total implementation time is thirty months. The schedule, from initial funding to the opening day of school, has been generated by the usual method of identifying goals, specifying the enabling tasks, making resource allocations, estimating elapsed time requirements, and deriving the intertask relationships. Before turning to scheduling specifics, we should comment briefly on the type of estimates we have made. The estimates are discernably lean, but they are consciously so; in other words they have not been uniformly or selectively inflated by the addition of some arbitrary contingency factor. This type of "fat-free" estimate can of course be unrealistic in the sense that some unforeseen contingencies will probably arise, but the alternative can be equally misleading, since the factor included for unforeseen contingencies is necessarily arbitrary. The most reasonable strategy, we believe, is to plan as if there will be no untoward contingencies, and then constantly review and revise the schedule as work progresses.

Preservice Training

The ultimate goal of implementation is, of course, full operational capability. Since this capability is also required for effective preservice training, the beginning of the training period--three months prior to the opening of school--becomes the milestone to which all other lines of development are related.

Physical Plant Construction

Whether new facilities are built or existing facilities are altered, the time required for plant construction will be about the same. In either case, construction time has been estimated at twelve months. This must be preceded by detailed architectural designs and construction bidding, which we believe could be completed in six months. Prior to this six-month period, the selection of an architect should require three months, and all design work must be preceded by site selection, which will be negotiated during the first six months of implementation activity. Thus, the total elapsed time for physical plant construction is twenty-seven months, which with a subsequent three months of preservice training, makes this the critical (i.e., no slack) path of development, and, in that sense, serves to establish the outside limits of scheduling.

Curriculum Production

The curriculum materials must be in hand for preservice training; the strategy of curriculum development is discussed in the chapter on curriculum, pp. 75-77. The estimated development time is twelve months, but this does not include the time required for recruiting developers (eight months), or a period for production (three months), once the prototype units have been developed. These three activities will allow very little overlap, hence the total elapsed time required to produce the curriculum is estimated at twenty-three months.

Community Field Work

Work in the community will begin at the earliest possible date, and will be continuous with the opening of the New School. The principal goals of this work are: (1) creation of a viable community organization; (2) provision for community involvement in implementation decisions (architectural design, staff selection, financing arrangements, curriculum development, governance policies, etc.); and (3) achievement of full student enrollment, with associated parent commitment. Community work cannot be scheduled as a linear development; its target dates are mostly derived from other implementation activities with which

it intersects, and there will be substantial overlap among the various tasks of concern. It stands, then, as a continuous support activity throughout the entire implementation period.

Operations Analysis, Preservice Training Development, and Job Training Design

These three activities are closely related. The development of the preservice and job training programs obviously anticipate a large portion of the operations analysis, since they need to incorporate details of operation--procedures, forms, reports, space assignments, job assignments, etc.--which the analysis will produce. The preservice training and job training programs will each require six months, and the operations analysis will require fifteen months. Since preservice training and job training developments can be parallel activities, and since both can overlap the last three months of operations analysis, the estimated elapsed time for this path of development becomes eighteen months. In the overall scheduling, this provides nine months of leeway for this path of implementation.

Summary

By present estimates, the critical path of implementation is clearly that for physical plant construction; it is also the one aspect of implementation over which we can exercise the least control, in that the work will be least amenable to acceleration through a larger commitment of resources. We have attempted to provide a "least possible" time estimate for this work; within the constraint imposed by this estimate, there also appears to be sufficient time for all other aspects of project development and implementation, given the application of reasonable resources. We take up this latter aspect of development below.

Implementation Costs

In discussing implementation costs, we deal with physical plant construction separately from other aspects of development. The principal reason for this distinction is that the two relate to different sources and modes of financing.

Construction financing is typically "local" in character on the rationale that it produces assets specific to a given locale; other kinds of development, where the major costs relate more to the creation (or production) of replicatable products or processes, are typically considered "general" in character, on the rationale that they can have widespread utility. We have retained this traditional distinction on the assumption that "general" costs of development would not be borne by the local school, district, or community (our discussion of financing--pp. 139-51--relates exclusively to plans for financing "local" costs), and in keeping with that assumption, physical plant construction costs are considered separately.

Cost Estimate--Physical Plant Construction

The preliminary architectural studies provide a basis for initial cost estimates, drawing on experience in the Los Angeles area to select lower and upper boundaries for construction costs per square foot. The "square footage of construction" figure is determined by the conventional standard of including all enclosed areas and one-half of the covered areas. Total enclosed area: 239,200 square feet. One-half the covered area (439,100): 218,550 square feet. Total square footage of construction: 348,475 square feet. Projected range of construction costs: $22 per square foot to $30 per square foot; total projected cost: $7.7 million to $10.5 million.

There are other costs associated with the physical plant that fall between construction and a turn-key operation, most notably those relating to equipment. However, because the educational program of this design is so different, the usual rules of thumb for equipment cost estimating are inappropriate to the point of being misleading. In some isolated areas, standard estimates could be made (e.g., cafeteria furnishings usually cost about $60,000; standard classroom furnishings about $800, and so on), but there are also many areas where the standard estimates are based on assumptions obviously at variance with the New School design (e.g., equipment for individualized instruction, centralized testing, data processing). Because a summary estimate cannot be made with even reasonable confidence at this time, none is given for equipment costs.

Other Implementation Costs

With few exceptions, development cost estimates have been derived on a man/month basis (i.e., the level of effort required to produce the products or research needed for implementation). Development costs more closely associated with specific parameters of the design have been derived on a per-unit or percentage-of-cost basis. Total projected development costs: $3.221 million-$3.443 million.

- Projected cost of curriculum development and production: $1,550,000

  The design calls for development of 1,000 curriculum units; the extended cost estimate is based on an average of $1,500 per unit. It must be remembered that this development does not include reliability or validation testing. Development would produce prototype units; $50 per unit is allowed for production of expendable materials to provide the initial levels needed for operation.

- Projected cost of architectural services: $425,000-$565,000

  These architectural and engineering costs are based on estimated construction costs ($7.7 million to $10.5 million), projected according to the following typical schedule: 7% on any portion to $1 million; 6% on any portion between $1 million and $3 million; and 5% on any portion exceeding $3 million.

- Projected cost of preservice training: $365,800

  This estimate covers faculty salaries for the three-month period of preservice training ($275,000), plus wages for student workers ($90,800) for the last month of the training period. The estimate does not cover the cost of administering the training; this is included in the estimate immediately following.

- Projected cost of operations analysis, preservice and job training design and implementation: $538,500

  The task of producing a detailed design of operations, of devising and administering a preservice training course, and of designing and implementing a job training program is estimated as a twelve man/year effort. The estimated cost also includes all forms of administrative, secretarial, and production support needed.

. Projected cost of implementation management: $223,500

The task of producing an evaluation plan, of working with and responding to the community organization, of providing liaison with district, state, and federal agencies, of managing and reviewing staff acquisition, and of managing curriculum development, is estimated as a five man/year effort. This estimate also includes all forms of administrative, secretarial, and production support needed.

. Projected cost of community field work: $140,000

The community field work will be performed over a period of thirty months by a community organizer and four assistants, with secretarial support. The estimate includes provision of a field office for the thirty-month period.

. Projected cost of faculty recruitment: $15,000

Whether or not staff recruitment is handled by the "host" district, there will be costs associated with the special recruiting requirements of the New School, which the "host" district could not reasonably be expected to absorb. The task is estimated as a three man/month effort.

. Projected cost of consulting services: Legal--$25,000; Economic--$20,000

It is anticipated that a number of legal and economic questions arising in the course of implementation will require fairly specialized expert analysis. While the precise levels of assistance that will be needed are difficult to estimate, the consulting services costs provided for in this projection would probably cover most contingencies. These costs could be reduced or even eliminated if public or private agencies were to lend experts to the project on a cost-free (part-time) basis.

Operations Costs

As with most school budgets, salaries represent the largest portion of projected operating costs. In contrast to most school budgets, however, there is no distinction made here between different categories of salary; in particular, no distinction is made between instructional and noninstructional salaries. And, in sharp contrast to most school budgets, almost half the salary costs accrue to student jobs.

. Projected cost of faculty salaries: $1,100,000

Faculty salary estimates are a function of two planning factors: the average (mean) salary for each faculty position ($15,000 per year), and the number of positions (74).

. Projected cost of student jobs: $908,000

Student wages will average about $35 a month, or $350 a year (based on a ten-month working year to account for absenteeism and vacations). The projected cost is based on this average, extended for 2,600 students. (The specific level of pay for each work level is given in the section on Student Jobs.)

. Projected nonsalary cost of operations: $582,000

This estimate represents the difference between salary costs and an overall operating budget of $2.6 million per year ($1,000 per student, per year). Whether it is adequate to cover costs of equipment replacement, maintenance materials, utilities, insurance, custodial supplies, administrative supplies, curriculum expendables, etc., cannot be determined with complete certainty at this time. However, the fact that it represents 20% of the projected budget suggests, by comparison with typical school expenditures, that it would not be an unreasonable level of funding.

FINANCES

Most schools will need more operating capital than they now receive if they are to increase the effectiveness of their educational programs. However, a relatively modest addition to current average expenditure levels--in the neighborhood of ten to twenty percent--would go a long way toward this goal. In many schools, this additional expenditure would represent the critical difference between an educational program that is barely acceptable and one that is substantially effective. For most "demonstration" schools, the traditional method of acquiring such additional resources is to seek a government or foundation grant. However for the New School, reliance on a demonstration grant could easily be self-defeating. "Seed" money will eventually dry up; the New School, if it is to survive as a viable entity, requires a self-replenishing fund and guranteed program continuity.

For the most part, the financial basis of school continuity can be guaranteed in the normal manner--through school district financial support based largely on standard state and local revenue sources. This support will certainly pay for most operational expenses; in more affluent districts it may indeed be entirely sufficient for the support of school programs. It would be prudent to assume, however, that some incremental expenditure will be necessary to sustain the New School in most districts. For the present, while we await long overdue reforms in public school financing arrangements, it must be admitted that there is no wholly satisfactory way of raising this small increment. We must essentially choose the least unsatisfactory alternative. One logical place to seek such help is from the parents and students who stand to benefit directly from a superior educational program. In our opinion, there are sound reasons for turning in this direction, if a mechanism that is rational and convenient can be provided.

There is a demonstrable correlation between education (years completed and achievement) and lifetime earning potential. Although the picture is muddied somewhat by noneducational social and family variables, there is evidence that

the difference between a grade school and college education may, on the average, be worth several hundred thousand dollars to an individual over the course of his working years. Therefore, on an economic basis alone, and without reference to compelling social and humanitarian arguments, a substantial dollar investment in the successful education of a given child is likely to yield excellent dividends in productivity, personal income, and taxes returned to the public treasury. It follows that such an investment is as sound, or more so, from the point of view of the parent or child directly affected, as it is from that of society and the public at large, and if the parent or child had available to them the means for making such an investment, they would be wise to do so. Though parents of school children may therefore have the highest incentives for making additional financial sacrifices in order to improve education, they are outnumbered at the polls by other voters during school bond and tax rate elections. Short of the considerable expense of private schools, there are no other mechanisms presently available through which they can translate such incentives into expenditures that will directly benefit their own children. The plan outlined below discusses a mechanism we believe to be viable.

The objectives of the financial plan are as follows:

1) Create a permanent, self-sustaining fund, without relying on the property tax, that will enable the New School to add at least ten percent to the total expenditure per student in the district where it is located, while relying on standard revenue sources for the bulk of its operational expenses.

2) Rely on federal assistance for special funding requirements, but emphasize long term, interest-free federal loans as opposed to outright grants.

3) Create school financing plans flexible enough to suit the widest possible range of urban economic needs and resources.

4) Provide the means for students and parents to translate incentives for extra investments in education into expenditures related directly to their own welfare.

The New School is designed especially for the poor, but we believe the educational model to be essentially valid regardless of the socioeconomic level of the students. This accounts for variations in the outline of the financial plan described below, which must be flexible enough to accommodate both rich and poor student populations. The examples referred to are entirely illustrative, and do not represent any final determination of how the numbers will eventually work out in any specific case.

The basic financial requirements are assumed to be as follows:

- Total required: $1,000 per student, per year.
- Portion of total that must be raised for New School: Difference between district expenditure per student, and $1,000.
- Example: Expenditures per student in Los Angeles are approximately $900/year. The New School must therefore raise $100/year per student, or, for a student population of 2,600 a total of $260,000/year.
- A small amount must be added to this base figure every year in order to account for inflation.

The proposed distribution of required financial support is as follows:

1) The school district provides a normal level of support, to the maximum of its ability, based on standard revenue sources.

2) Parents, when they can afford it, pay incremental costs where required. Otherwise, students pay incremental costs, by borrowing from a fund loaned to the community by the federal government--which eventually gets its money back.

Funding Mechanism--Poverty Area

1) The Community Educational Development Corporation (see above, p. 107) agrees with the "host" school district to share in the financial support of the New School. The CEDC agrees to cooperate in the implementation of state and local educational requirements, and the district agrees to support the New School at a per-student level equivalent to the support it gives all other students in the district.*

*The CEDC is used in this illustration because it would probably be an effective type of organization for this purpose. Other forms of community organization might be equally effective, and their use should not be forclosed.

2) The federal government creates an operational reserve for the New School, in the form of an interest-free loan to the CEDC, which invests the money at current treasury-note rates, and uses the interest from this investment to establish a special operational fund. (Alternatively, the federal government could retain the principal, and simply guarantee the yearly interest to the CEDC.)

3) The students in the New School borrow from this fund, at no interest, a yearly amount equivalent to the difference between district spending per student and the desired school operational funding level of $1,000 per student. The CEDC uses the amount borrowed by the students to supplement district financial support for the New School.

4) The students repay the CEDC, at a rate identical to the rate at which the money was borrowed, after they have begun to earn their own incomes. They have no obligation to repay their loans until and unless their earned incomes exceed an amount equal to some preestablished minimum, such as the social security tax base in that year, and their obligation for repayment ceases if their earned incomes fall below that figure. Thus, a student who borrowed $100/year for thirteen years in order to supplement school district funds spent on his education, is obligated to pay back $100/year for thirteen years, or a total of $1,300, provided he is earning more than an amount equal to, say, the social security tax base of $9,000.

5) The federally established operational reserve is of sufficient size so that interest on the principal, together with student repayments and interest on those repayments, eventually leads to the creation of a permanent reserve fund of like size, without erosion of the original principal, which is then paid back to the federal government. The speed with which the original principal can be repaid depends upon the size of the federal loan and the level of student repayment.

6) Example: Let us assume that in a poverty area no student's parents can afford any contribution to school operating expense. Let us also assume that an extra $100 per student is required in order to bring school operational spending up to the level of $1,000 per student. Thus, the CEDC must develop $260,000 per year in order to subsidize the 2,600 students in the school. This $260,000 expense (plus small increments for inflation) will continue yearly until students begin to graduate, join the labor force, and begin to pay money back into the fund. As more and more students graduate, go to work, and pay back, and as the yearly amount returned to the CEDC grows, the net amount of extra money that the CEDC will have to

develop will diminish. Let us assume, however, that not all graduates will repay their loans in full, so that the net yearly expense to the CEDC will never be completely eliminated. What the CEDC must find, therefore, is the following:

a) Money to meet yearly expenses until a complete payback cycle has been established (that is, until students who begin with the school in kindergarten begin to pay back into the fund).

b) Money to make up the difference between the yearly requirement for extra funding (beyond district support), and yearly income from repaying students, since not all students will repay their loans.

c) A permanent, self-renewing basis for providing these subsidies.

In order to meet these goals, the CEDC obtains an interest-free loan of $4.5 million from the federal government, and invests the money in order to provide a yearly return of $260,000. When student loan repayments begin to come in, they too are invested, thereby augmenting the original capital reserve. The combined effect of accumulated interest and student loan repayments enables the reserve fund to duplicate itself (that is, become self-sustaining), and the federal loan can be repaid. Thus, if all New School graduates eventually repay the CEDC, the original federal loan can be repaid in a minimum of 15 years. If less than half of the students are able to repay their loans from the CEDC, a permanent reserve cannot be established. If half the students repay their loans, the original federal loan to the CEDC can be repaid in 23 years; if eighty percent of the students repay their loans, federal monies are returned in 17 years. Figure 6 illustrates these trade-offs.

Funding Mechanism--Mixed Income Area

1) A Community Educational Development Corporation is created, as outlined above.

2) The CEDC agrees with the "host" district to share in school financial support.

3) An operational reserve is created by the federal government, in the form of a loan to the CEDC.

4) Parents who can afford it pay a yearly amount equivalent to the difference between district spending per student and the desired school operational funding level of $1,000 per student. Their payments are made to the CEDC, which adds the money to district financial support for the New School. Where parents cannot afford this payment, or can afford only part of it, students may borrow all or part of the required amount.

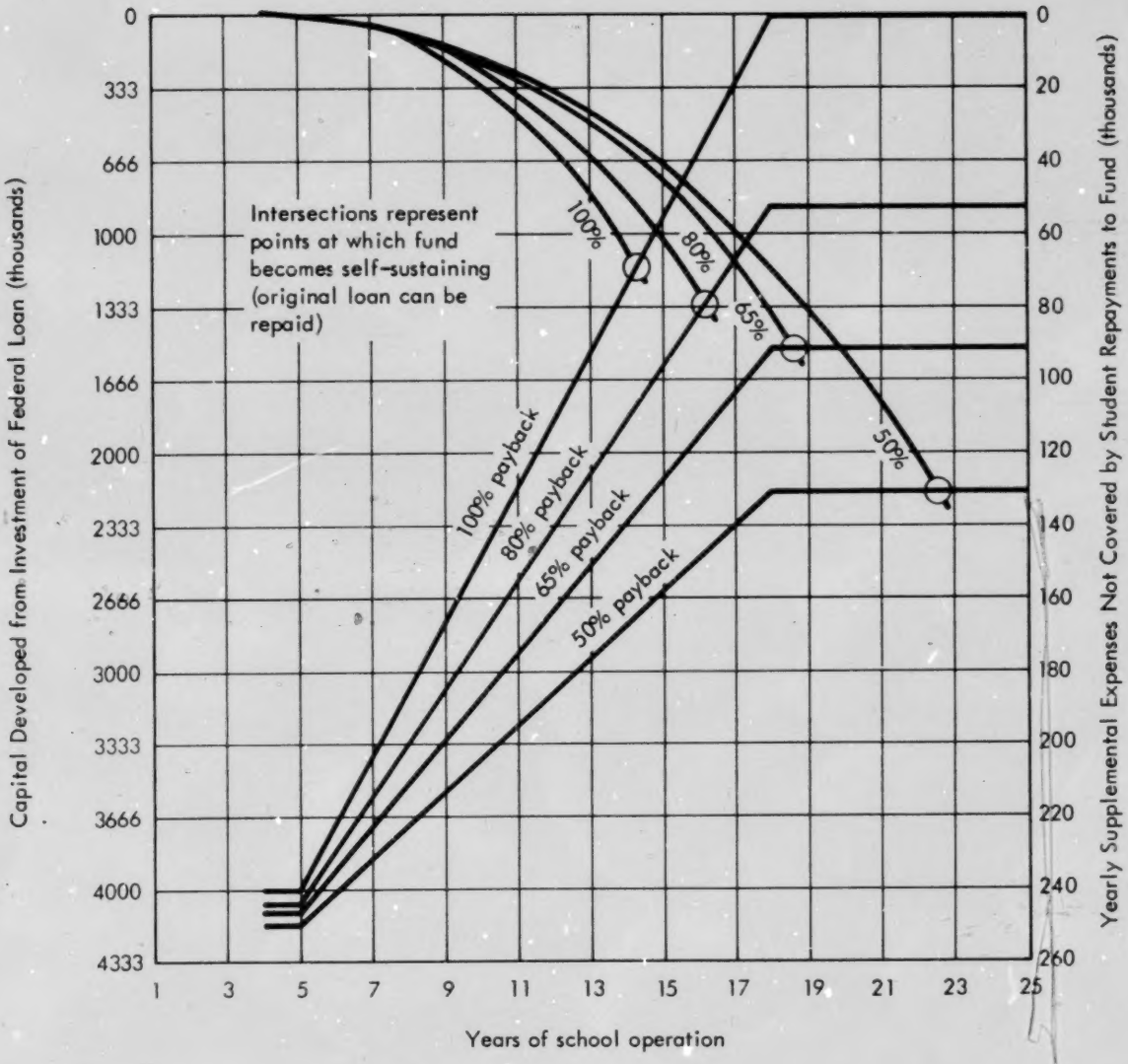


Figure 6. CEDC Operational Reserve Fund: Federal Loan Repayment Schedules Reflecting Different Student Repayment Rates

5) Student loans are repaid to the CEDC as outlined above.

6) Since there are fewer student loans than in the "poverty area" case, the federal loan can be repaid more quickly. Alternatively, the size of the federal loan can be reduced.

7) Example: If half the students have payments made for them by their parents, and eighty percent of the remaining 1,300 students repay their loans, a federal loan of $4.5 million can be repaid by the CEDC in no more than 10 years, leaving a permanent, self-renewing capital reserve. Alternatively, a federal loan of $2.75 million can be repaid in 17 years.

Funding Mechanism--Affluent Area

1) A CEDC is created.

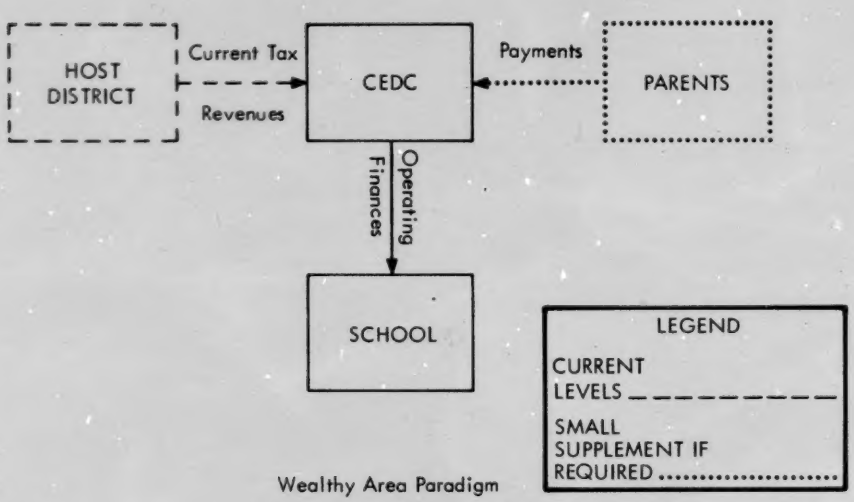
2) The CEDC agrees with the "host" district, where necessary, to share in school financial support.

3) In many affluent areas, school district expenditures per student already meet or exceed the $1,000 requirement. In cases where this is not so, or where the CEDC seeks additional funding anyway, parents obligate themselves to pay the entire difference out of pocket, through the CEDC, which adds the money to district financial support for the New School. There is no federal loan, nor do students borrow any of the money required for extra support.

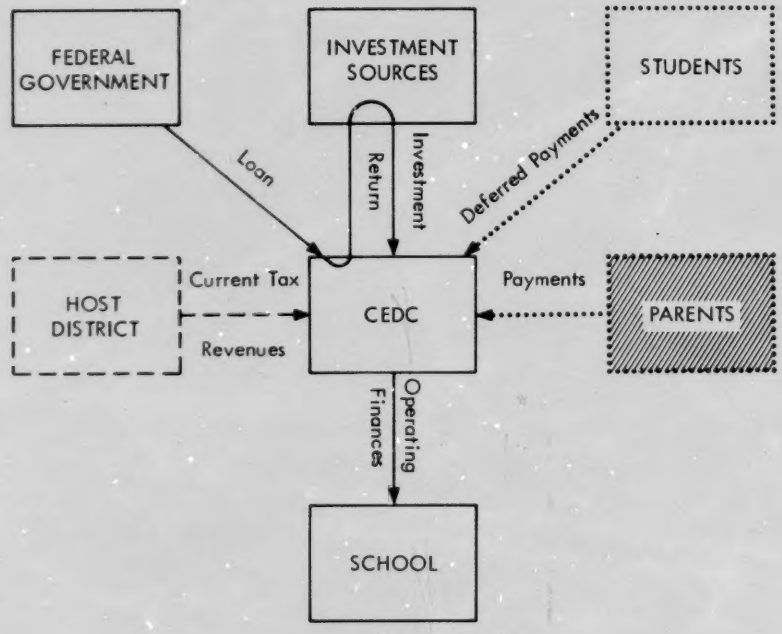
4) A version of this arrangement that seems particularly appropriate for new towns and large new housing tracts is the school-centered residential community, in which new home buyers agree as part of their tax obligation to pay a special tax of fixed amount, applicable only to residents with children in the school. The money from this special tax is earmarked for the New School, which draws the bulk of its financial support from the usual sources.

Figure 7 summarizes and illustrates the relationships described in the three cases discussed above.

Some points of clarification: We have considered three different economic situations, but since it will be difficult to know in advance just how any given situation will turn out, we suggest planning on a worst case basis, which in our example of the "poverty area" had all 2,600 New School students borrowing from



Wealthy Area Paradigm



Poverty Area Paradigm

(In mixed income areas some funds would come from direct parent payments, and some from deferred student payments)

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Figure 7. Paradigms of Experimental School Funding for Current Costs of Operation

the CEDC, with no parent payments. If this turned out to be overly pessimistic, an appropriate, revised financial schedule would emerge as school operations progressed.

Perhaps the most unusual feature of this plan is the student loan and repayment commitment. But the idea should not seem all that new: Under present social security arrangements, a sum paid into a fund during a person's working years is repaid to him in specified yearly amounts, after he stops working. We have simply reversed this concept: The "payment" (or loan) is made first, and is recovered from wages later. It is inverse social security, and the fund that is created for the New School is replenished directly from the economic benefits that accrue to participants through their association with the school and its provision of a superior education.

It is important to note that this is a guaranteed loan plan, open to all applicants. There are no special requirements, no means tests, no declarations, and no administrative discretion of any kind. Any student who applies will be eligible for a loan.

Inflation will necessitate yearly increases in operating expenditures for the New School. Two mechanisms will help provide the needed extra funds: The bulk of the school's support, tied to the property tax base, will rise as the assessed valuation of district property goes up. In addition, student loan repayments will be made in 'graduation year' dollars, and thus be inflated slightly over the actual amounts borrowed.

The method outlined above for raising incremental operating capital is not put forward here as a suggested solution to the public school finance problem. Our motivation has been to provide a guarantee of program continuity for the New School; nothing more ambitious is implied, and we would be equally interested in any alternative plan that promised to produce the same result. We believe, however, that reform of public school finance--and increased taxpayer willingness to support the schools--will not be unrelated to prospects for genuine

educational reform. If the New School can be sustained financially, and contribute to the improvement of public education, it may yet have an impact, unrelated to this modest and temporary plan, on public financial support for the schools.

Financing Physical Plant Construction

The New School can be financed by a school district in the same way its other schools are financed--through tax supported construction bonds, or, in some cases, through lease-option arrangements supported by the district's general operating revenues. However, there is another financing concept, used now mostly in New York City, but attracting widespread attention, that we believe is more attractive, especially for the New School--the concept of "combined occupancy."

Under combined occupancy arrangements, a portion of a school site is devoted to school construction, with the balance of the site supporting an income producing commercial or residential development. Lease payments from the developer of the income property--for land, subterranean rights, or air rights--are made to the school district (or other public authority) which owns the site. These payments, together with real estate taxes on the residential or commercial development (or payments in lieu of taxes), are used to help pay for construction of the school. Where the cost of school construction cannot be subsidized in its entirety by these payments, the school district pays the balance, from tax revenues.

As an illustration of the basic steps that might be taken in such an arrangement, we outline below two possible variations, in this case with the Community Educational Development Corporation playing a major role.

The CEDC as Developer

1) The "host" school district sells tax-exempt bonds in order to finance school construction. Debt service on the bonds is guaranteed by the federal government.

2) The CEDC leases part of the school site from the school district.

3) The CEDC obtains a federal or commercial loan, and builds a commercial structure, commercial center, or residential development on the portion of land it has leased from the district.

4) Income from commercial or residential rentals goes first toward retirement of the construction loan obtained by the CEDC.

5) Debt service on the school construction bonds is paid with income from two sources:

   . The lease of a portion of the school site to the CEDC.

   . Taxes paid by the CEDC, which the district may earmark for the New School project.

6) Income that may accrue to the CEDC from the commercial or residential development after all costs have been met is reserved for the New School by the terms of the CEDC charter, and may also be used to help pay school construction costs.

The CEDC as Broker

1) The school district leases the entire site of the New School to the CEDC, for $1 per year.

2) The CEDC finds a developer who is interested in using part of the school site, and works with him in creating a comprehensive plan for the construction of both the New School and commercial or residential facilities.

3) The developer builds and finances the school as well as the income property.

4) In return for financing the school construction, the developer may lease the balance of the site for $1 per year, and may be forgiven part of the taxes on his development, until the school construction loan has been paid.

With further study, we should be able to identify which approach makes the most sense in a given set of circumstances, and what other variants, if any, should be considered. It may turn out, for example, that a long term federal loan may be more advantageous than construction bonds. Such a loan could be made either to the CEDC, which would then act as developer of the total project, or to the

school district, which would build the New School and leave the commercial development to the CEDC. There may also be cases in which the outright sale of portions of district-owned land may be easier than lease arrangements.

The approach outlined above makes use of the CEDC as either developer or broker. Clearly, a school district, a city redevelopment agency or some other public authority could put such a project together; indeed, without the cooperation of many public agencies the concept would not be viable. However, there is a special advantage to maintaining a central role for the CEDC: A key feature of the New School is its relationship to the community it serves; the CEDC is a crucial link in that relationship. Accordingly, it should have the authority to influence the choice of commercial or residential developments it deems best suited to community needs and life styles.

With careful planning to ensure land use and project design compatible with school proximity, we would anticipate the following advantages from combined occupancy:

1) "Low-cost" schools. The school district is essentially trading part of its land--presently underutilized--for the construction of school plant. In some cases, air and subterranean rights may also be traded. The net school construction cost to the district is substantially reduced, or in cases where land values are high enough, may be cut to zero.

2) New taxes. Land used by the district in this way is returned to the tax rolls, as fully developed property.

3) Economic development. The usual benefits of new economic developments accrue also to this kind of project, including employment and job training opportunities, and the support of satellite service industries.

4) Dual facility use. Some facilities may be used to service both the school and associated commercial or residential development. Parking lots, auditoriums, meeting rooms, and athletic facilities come to mind. If city or state agencies become lessees on part of the property, many facilities can be located in a way that will serve both children and the general public, including libraries, employment agencies, recreation centers, state service centers, and health care services. Private agencies may also be interested in such a location, which would be convenient for family service and private welfare work.

5) Enhanced educational opportunity. Students could have greater access to cultural and recreational facilities not otherwise conveniently available. They would also have limited part-time employment and apprenticeship opportunities that would not require them to travel away from the school campus area. Part-time work could be performed at any convenient hour during the day, and not just "after" school.

6) Public convenience. The location of some small shops on the same site as a school would often make it convenient for parents to combine daily shopping errands with school-related business such as parent-teacher conferences, participation in CEDC affairs, or picking up young children after school.

7) Aesthetic and psychological advantages. For any community, but especially in areas of some economic deterioration, the creation of a new community-related center, with improved education of the community's children as the central focus, can be a powerful new source of community pride, activity, and rejuvination.

Unlike the situation described above for financing daily operations in the New School, there is no paradigm case for the financing of school plant construction. Variations in site size and location, in land values and district demographic characteristics, will be crucial factors in the analysis of financial feasibility in any given instance. On balance, however, we believe there is ample preliminary evidence that the general approach is conceptually sound, and well worth further, detailed investigation. In particular, the New School seems an appropriate vehicle for further exploration in this area, since the concept, if found to be generally applicable, could well have a major impact on school construction finance throughout the country.

CONCLUSIONS

In our introduction to this design, we made it clear that we intend to create a school that can serve as model and impetus to the reform of urban education. Between those introductory remarks and these pages, a great many details and particulars have been discussed; in closing, it therefore seems appropriate to reflect briefly on the design as a whole, especially as it relates to the essential issue of social change.

The New School design is a response to socioeducational conditions that now obtain, with greater or lesser degrees of severity, in most American cities. These conditions demand change and reform, not merely by virtue of some general and common commitment to improvement, but as an urgent and pressing social need. For purposes of analysis, planning, and discussion, it may be possible (up to a point) to abstract and distill the wholly "educational" aspects of this problem from the larger social setting in which educational problems are imbedded, but as a practical matter any such abstraction would be fatal to reform. Only when "educational" issues are restored to their proper social context will they be viewed with the sense of urgency and impatience that is appropriate to current conditions and a necessary prerequisite to the desire for social change.

With this issue, as with most social issues of this character, decisions must be made regarding the proper use of limited resources. Typically, the overarching decision must be whether to commit those resources to the further reduction of uncertainty, to confront the social problem head on, or to seek some middle ground in which elements of both strategies are employed. Each approach has its attractions and its risks. A decision in favor of a further reduction of uncertainty (studying the problem) may yield more and better information about the actions one might wish to undertake, but risks further deterioration of a situation even while it is being studied, with potentially pernicious consequences. Choosing to confront the social problem head-on (designing substantive programs) may arrest or ameliorate a deteriorating situation, but risks the misguided commitment of scarce resources to programs constructed without sufficient

knowledge of how and where to intervene on behalf of genuine reform. A "middle ground" strategy may look attractive as a way to optimize, whereas it may in fact have the effect of risking both further deterioration and poorly designed programs, without the benefits of either careful study or effective social action, through the insufficient commitment of resources to both objectives.

This decision problem is more than a philosophical abstraction; it has real consequences for the ways in which new resources will be committed to the reform of urban education. Not that resource allocation decisions are ever free of well-known "irrational" influences--programs created by the accretion of small segments rather than by careful design, the impact of pure chance, of personal prejudice, of bureaucratic budget schedules, or of political pressures. But the broader strategic commitment--the deliberate decision--often dominates such "irrational" influences, and, without such a commitment, decisions are in effect abdicated to these forces, and the opportunities for using scarce resources wisely are diminished accordingly. We are therefore concerned about the kind of strategic commitment that will be made.

The natural tendency, if history is any guide, will be to decide on behalf of further study--or for some minimum substantive program with a great deal of study attached to it. In the short run, a decision for further study may look attractive because it will reduce the practical risks of error; it is least visible politically and most acceptable to the broadest constituency. We would argue that in the not-much-longer run, such a strategy will be self-defeating; that it would be a poor use of scarce resources; that the risks of a commitment to bold programs of reform are to be preferred to the consequences of the continuing deterioration of urban education. We believe the social need is great; we therefore propose a strategy of direct confrontation, in which the emphasis is on the design of substantive programs.

We propose this strategy in the knowledge that the risk-benefit calculus in this case is tempered for the decision maker by the particulars of existing programs in urban education. Piecemeal innovative programs already exist in plentiful supply, and are spread thin throughout the entire urban education system. Thus,

if a program-by-program "patching" strategy is desired, there are ample resources for its continued implementation. If the most desirable route is thought to be an amplification of traditional methods, the problem will essentially be one of finding additional resources on a vast scale. That would surely be a strategy of desperation, however, in which no answer is sought save the continuation of current educational practice, writ larger. Further study may be preferred, but it is evident that we are now virtually inundated with studies--they are the chief product of numerous agencies, research companies, universities, and private scholars. Somewhere, there must also be room for a bold program of innovation and experiment, which is allowed to divert some part of the resources committed to the drive for educational change. Such a program should be a self-conscious move in the direction of a high-risk/high-payoff strategy for the reform of urban education. It would not forego careful evaluation and analysis, but neither would it make experimentation and substance serve the needs of data collection and statistical validation before the needs of social reform. It would not forego careful, thorough, professional planning of the highest caliber, but neither would it insist that perfect plans be achieved before workable plans were implemented. And it would recognize that there is by this time hardly any way in which a program of reform could possibly make matters much worse than they now are, and will continue to be, in the absence of substantial change.

In the identification of this need for action, and in the expectation that the strategy we propose will be found desirable, we have advanced a design that is concerned, not only with educational substance, but with the practical problems of time, economy, and scale. The plan proposes discrete and identifiable changes in educational program and procedure, on a scale that is within reach of government resources that are likely to become available for pursuing such an option. The proposed new educational model would become a reality in a given locale, at a specific time in the foreseeable future. It would have financial viability as a continuing operation. It would have transferable economies, since more than half of the development costs would not have to be borne more than once. And it is scaled at a level that would make an appreciable impact on urban education with each quantum of replication.

There is, as we have noted, an unavoidable risk: The design, in responding to immediate need, must accept the consequences of uncertainty; it cannot wait for advanced certification of success. It is therefore vulnerable to criticism from those who would emphasize the need for greater assurance before proceeding. In the abstract, this criticism is sensible and compelling, but, considered in the broader social context, we cannot accept the implication that programs of reform must always wait until we know more about the problem (and could presumably deal with it more effectively). Unless practical considerations intervene, that time never comes.

APPENDIX

Three aspects of the operational specifications are presented here as a supplement to materials in the main body of the text. A list of reviewers of earlier drafts is also included.

Sample Curriculum Unit

This sample unit is designed for assisted (tutored) instruction in the structured curriculum. It is an example of a procedural lesson plan of the type that will be used to train and guide paraprofessionals (student assistants) in the administration of curriculum substance. The materials are intended primarily for training and rehearsal; once a paraprofessional had mastered the procedure of administration, he could rely entirely on the score sheet for prompting on the exact sequence of instruction. Typically, a paraprofessional would be responsible for three or four such units, but he would never be required to administer more than one at a time, and then never to more than four students at a time. The photograph on page seven of the sample unit shows a device that was built expressly for the purpose of testing this procedural lesson plan. (The authors wish to thank Mr. Clif Zerbel for his design and prototype production.)

Student Scheduling

The four principal patterns of student program scheduling are given in schematic form. The diagrams depict the sequence priorities and scheduling options in the major categories of program scheduling (aside from "free-time" activities). The differences in pattern relate primarily to differences in job duration (one, two, or three hours daily), and the need for (or independence from) assisted instruction. In operation, each student will determine his own schedule on a weekly basis, and then make day-to-day adjustments to emerging demands and circumstances.

Student Job Allocations

Five figures show activity schedules and staffing level schedules for the three major program areas: Instruction, Instructional Support, and General Support. For planning purposes, the curriculum is differentiated into standard subject areas--a summary of this delineation precedes the activity schedules--but, as we have indicated earlier, the curriculum could also be adopted to any other format of organization. The activity scheduling indicates when the various programs are offered and when the various services are maintained. The numbers in the rectangular figures represent the staffing levels, and the location of the rectangles, relative to the time scale at the top of the page, indicates the daily scheduled hours for each position.

Reviewers of Earlier Drafts

Two earlier drafts of this design were critically reviewed by a number of individuals, and representatives of organizations concerned with education. Though many of the reactions by reviewers prompted us to improvement, and though some criticisms led to substantial changes, it would not be appropriate to either the spirit or procedure of review to single out individual contributions. Finally, it should be stated that the list merely signifies review, and does not, of course, necessarily constitute endorsement of the design in its present form.

NONSYMBOLIC ADDITION TO TEN

GENERAL DESCRIPTION

Objective: Memorization of addition facts with accompanying visual, nonsymbolic clues: Shown two sets of objects, one after another, the student should be able to specify (while the combined set is out of sight) the number of objects that result when the two are placed together.

Prerequisites:

- ·No writing required, only verbal response
- ·Ability to count-in-order to ten (point-and-count)
- ·Maturation: conservation of physical elements: when objects disappear (under surveillance) from sight, student should realize that they persist and be able to specify the number.
- ·Vocabulary: BALL BOX BEGIN HOW MANY
- ·Vocabulary acquisition: ADD

Materials:

- ·Ten balls--identical color and size
- ·Mechanism to hold balls (see photograph, p. 7)
- ·Instructor score sheets (sample attached)

Procedures:

- ·Teaching ratio 1:1 to 1:5
- ·Date and save all score sheets

Intermediate objectives:

- ·STEP I: test of prerequisite skills
- ·STEP II: introduction of concept (addition)
- ·STEP III: introduction of unknown
- ·STEP IV: practice to mastery of memorized addition facts

Conditions:

- ·Zero is excluded (as augend and/or addend)
- ·Sums will range from 2 to 10
- ·Criterion test:
  - ·Same mode of presentation and response as STEP IV
  - ·100% on nonreplacement sample from all sets (Sample N=20)
- ·Failure procedure: if student fails (by score sheet criteria) on any of the STEPs, notify Counseling.

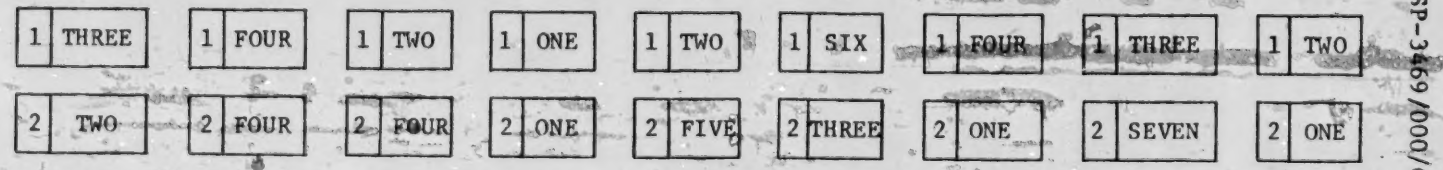
STEP I:

- Empty trough and lower box
- Put [ ] balls in upper trough
- Have student point-and-count balls
- Release balls to lower trough
- "How many balls are in the box?"
- Lift box; have student point-and-count balls for confirmation or correction
  - If response is incorrect, repeat with same number
  - Repeat STEP I until student responds with correct answer ten consecutive times

SEQUENCE: FIVE | TWO | FOUR | SEVEN | ONE | SIX | THREE | TEN | EIGHT

STEP II: (with box lifted back throughout--lower trough exposed throughout)

- Empty trough
- Put [1] balls in upper trough
- Have student point-and-count balls in upper trough
- Release balls to lower trough
- Put [2] balls in upper trough
- Have student point-and-count balls in upper trough
- "When we begin with [1] balls and we (release balls to lower trough) add [2] balls, then how many balls do we have?"
- Have student point-and-count balls; tell how many balls in lower trough [RESPONSE]
  - If response is incorrect, repeat with same numbers
  - Repeat STEP II until student responds correctly nine consecutive times



STEP III: Repeat STEP II with the following modifications:

- Begin each trial with empty trough
- Lower box before putting | 1 | | balls in upper trough
- Follow sequence as outlined, but immediately after asking how many balls lift box to enable student to point-and-count in giving response
  - If any response is incorrect, repeat with same numbers
  - Repeat STEP III until student responds correctly nine consecutive times

(same sequence as STEP II)

STEP IV:

- Empty trough and lower box
- Put [1] balls in upper trough
- Have student point-and-count balls
- "We start with [1] balls." Release balls to lower trough.
- Put [2] balls in upper trough
- Have student point-and-count balls
- "And we add [2] balls." Release balls to lower trough. "Then how many balls do we have? How many balls are in the box?"

  [RESPONSE] (Allow student to count mentally if he desires)

- Lift box; have student point-and-count balls for confirmation or correction
- "When we start with [1] and we add [2] more, then we have [3 SUM]."
  - If any response is incorrect, repeat with same numbers
  - In practice drop out any combination with five consecutive correct responses until combinations get down to two
  - Repeat STEP IV until student responds correctly to all combinations in a set, then move on to next set
  - Begin each session with all previously mastered sets
  - Mastery criterion: correct responses to full sequence in all sets for three successive-- when student meets mastery, make appointment at test center

Sequence sets:

1 ONE	1 TWO	1 THREE	1 FOUR	1 FIVE	1 SIX	1 SEVEN	1 EIGHT	1 NINE
2 ONE	2 ONE	2 ONE	2 ONE	2 ONE	2 ONE	2 ONE	2 ONE	2 ONE

1 ONE	1 TWO	1 THREE	1 FOUR	1 FIVE	1 SIX	1 SEVEN	1 EIGHT
2 TWO	2 TWO	2 TWO	2 TWO	2 TWO	2 TWO	2 TWO	2 TWO

1 ONE	1 TWO	1 THREE	1 FOUR	1 FIVE	1 SIX	1 SEVEN
2 THREE	2 THREE	2 THREE	2 THREE	2 THREE	2 THREE	2 THREE

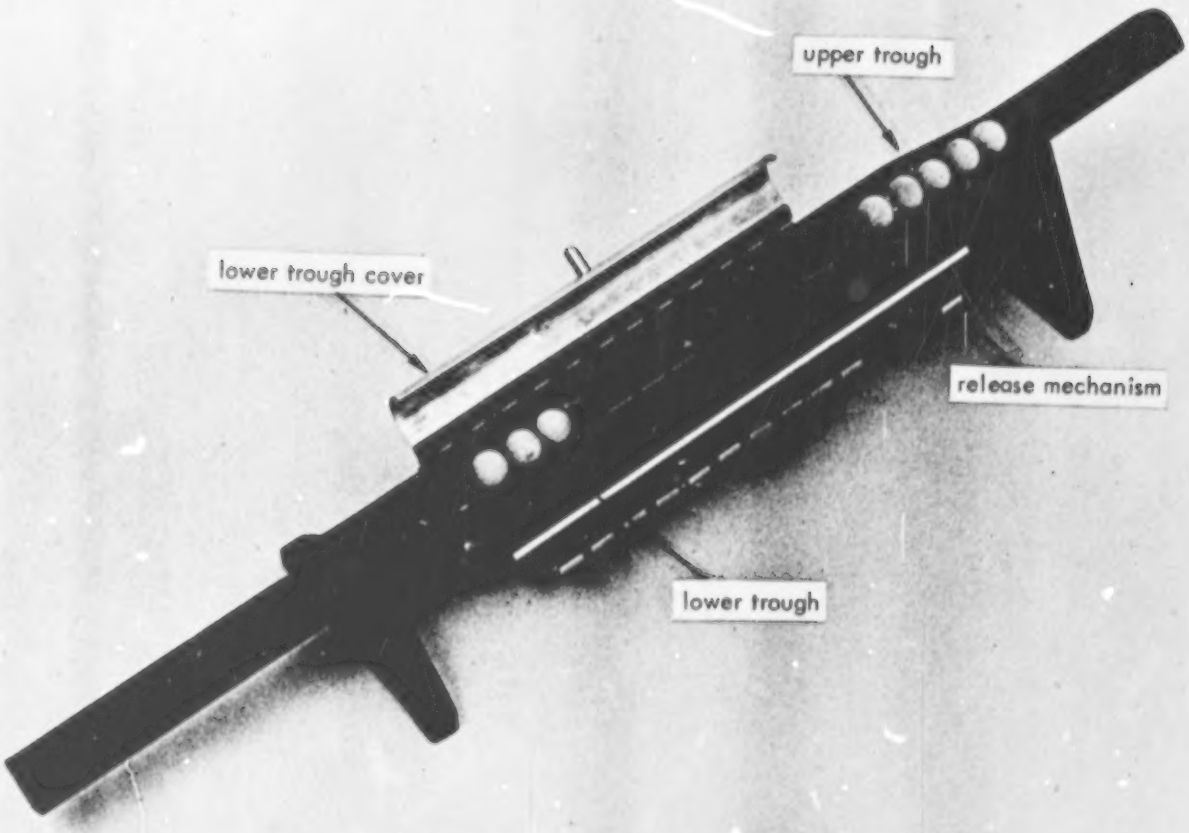
1 ONE	1 TWO	1 THREE	1 FOUR	1 FIVE	1 SIX
2 FOUR	2 FOUR	2 FOUR	2 FOUR	2 FOUR	2 FOUR

1 ONE	1 TWO	1 THREE	1 FOUR	1 FIVE
2 FIVE	2 FIVE	2 FIVE	2 FIVE	2 FIVE

1 ONE	1 TWO	1 THREE	1 FOUR
2 SIX	2 SIX	2 SIX	2 SIX

1 ONE	1 TWO	1 THREE
2 SEVEN	2 SEVEN	2 SEVEN

1 ONE	1 TWO	1 ONE
2 EIGHT	2 EIGHT	2 NINE



Mechanism as viewed from student side.

NONSYMBOLIC ADDITION TO TEN

Instructor Score Sheet

Student name: _____

Student number: _ _ _ _ _ - _ _ _ - _ _ _ _

STEP I:

FIVE	TWO	FOUR	SEVEN	ONE	SIX	NINE	THREE	TEN	EIGHT
FIVE	TWO	FOUR	SEVEN	ONE	SIX	NINE	THREE	TEN	EIGHT
FIVE	TWO	FOUR	SEVEN	ONE	SIX	NINE	THREE	TEN	EIGHT
FIVE	TWO	FOUR	SEVEN	ONE	SIX	NINE	THREE	TEN	EIGHT
FIVE	TWO	FOUR	SEVEN	ONE	SIX	NINE	THREE	TEN	EIGHT

Refer to Counseling

STEP II:

THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE
THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE
THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE
THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE

Refer to Counseling

STEP III:

THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE
THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE
THREE	FOUR	TWO	ONE	TWO	SIX	FOUR	THREE	TWO
TWO	FOUR	FOUR	ONE	FIVE	THREE	ONE	SEVEN	ONE

Refer to Counseling

NONSYMBOLIC ADDITION TO TEN

Instructor Score Sheet

Student name: _____

Student number: __ __ __ __ - __ __ - __ __ __ __

STEP IV:

ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE
ONE	TWO	THREE	FOUR	FIVE	SIX	SEVEN	EIGHT	NINE
ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE	ONE

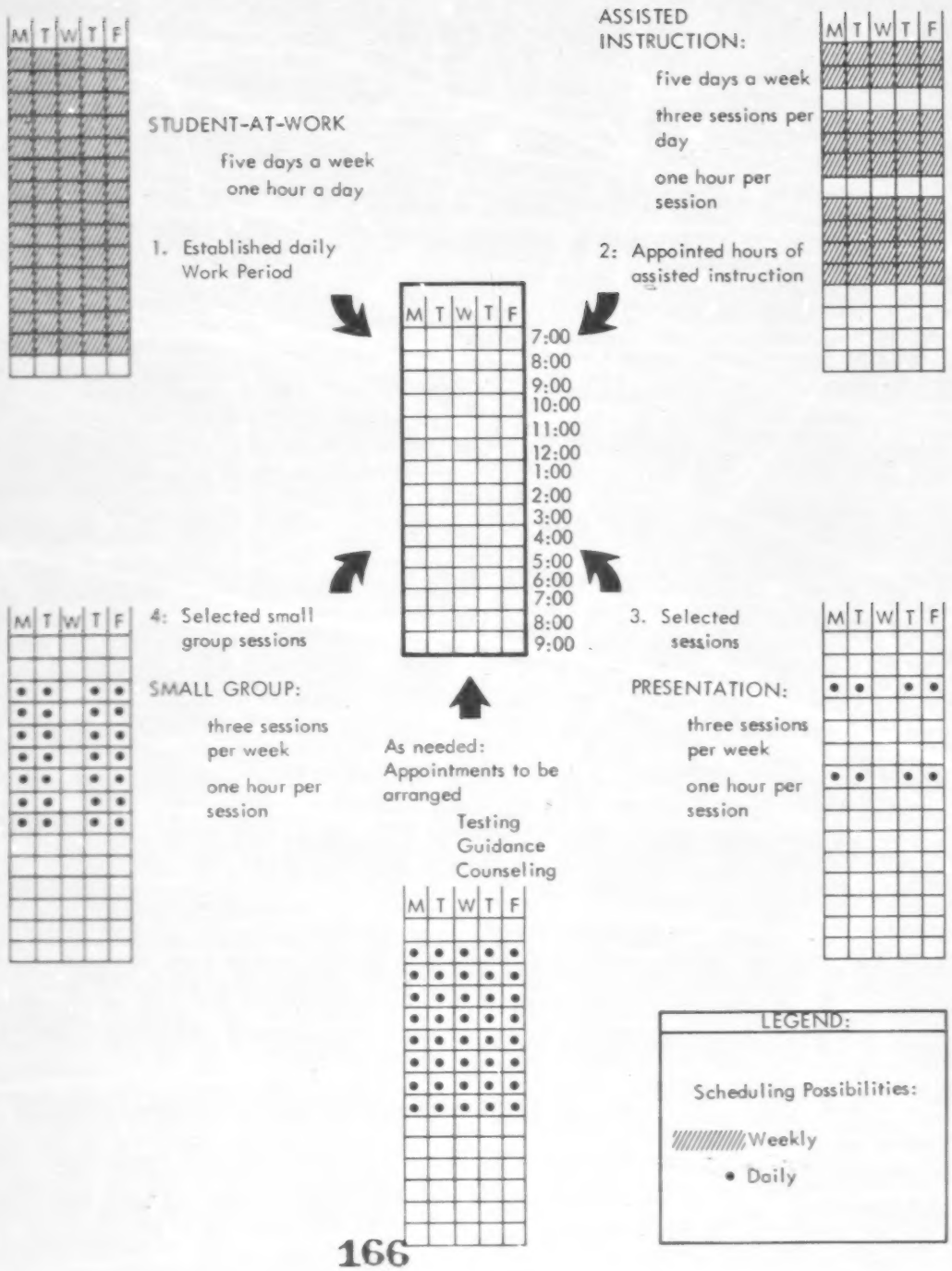


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Figure 8. Schematic of Student Scheduling Sequence and Options: One-Hour Job, Assisted Instruction

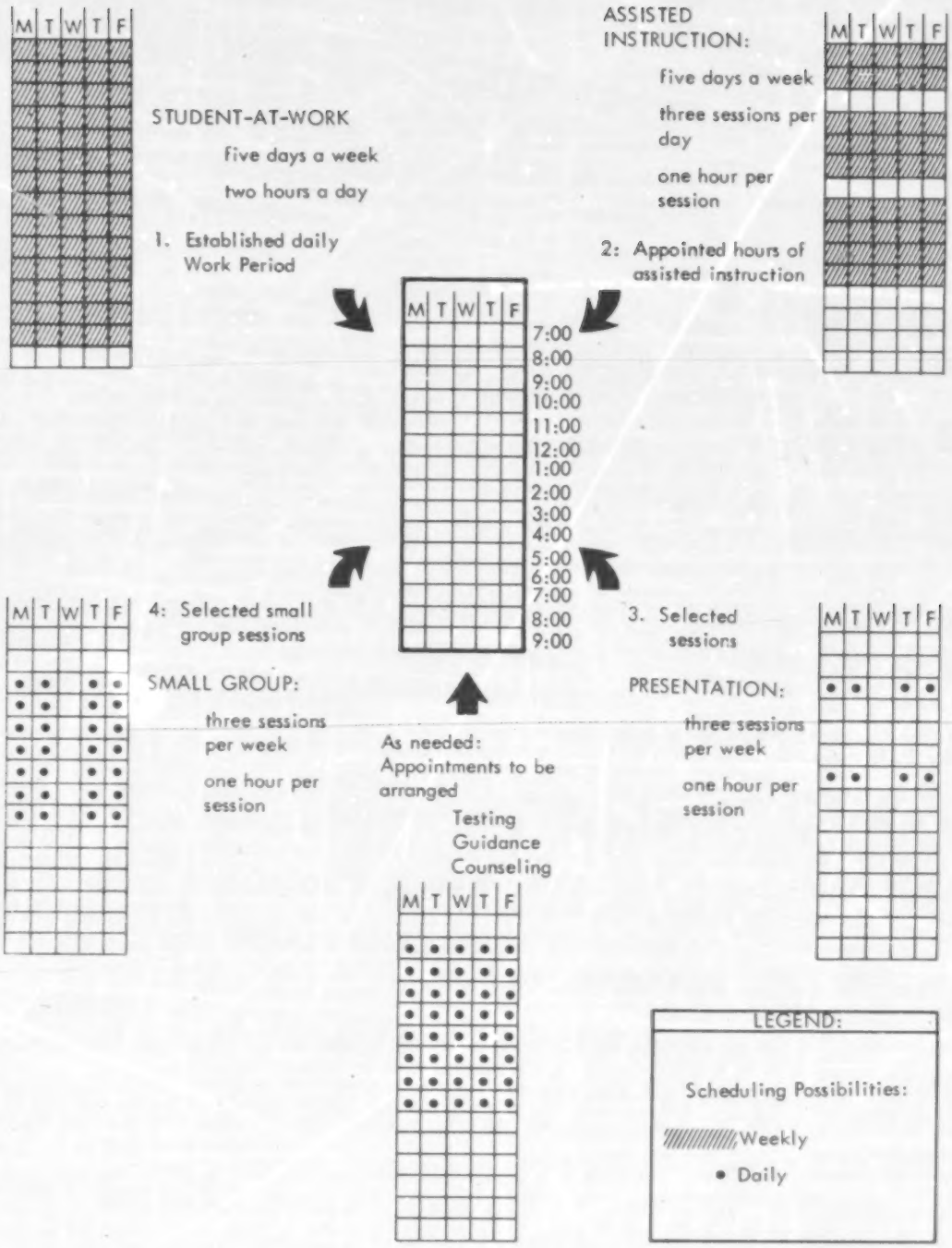

Figure 9. Schematic of Student Scheduling Sequence and Options: Two-Hour Job, Assisted Instruction

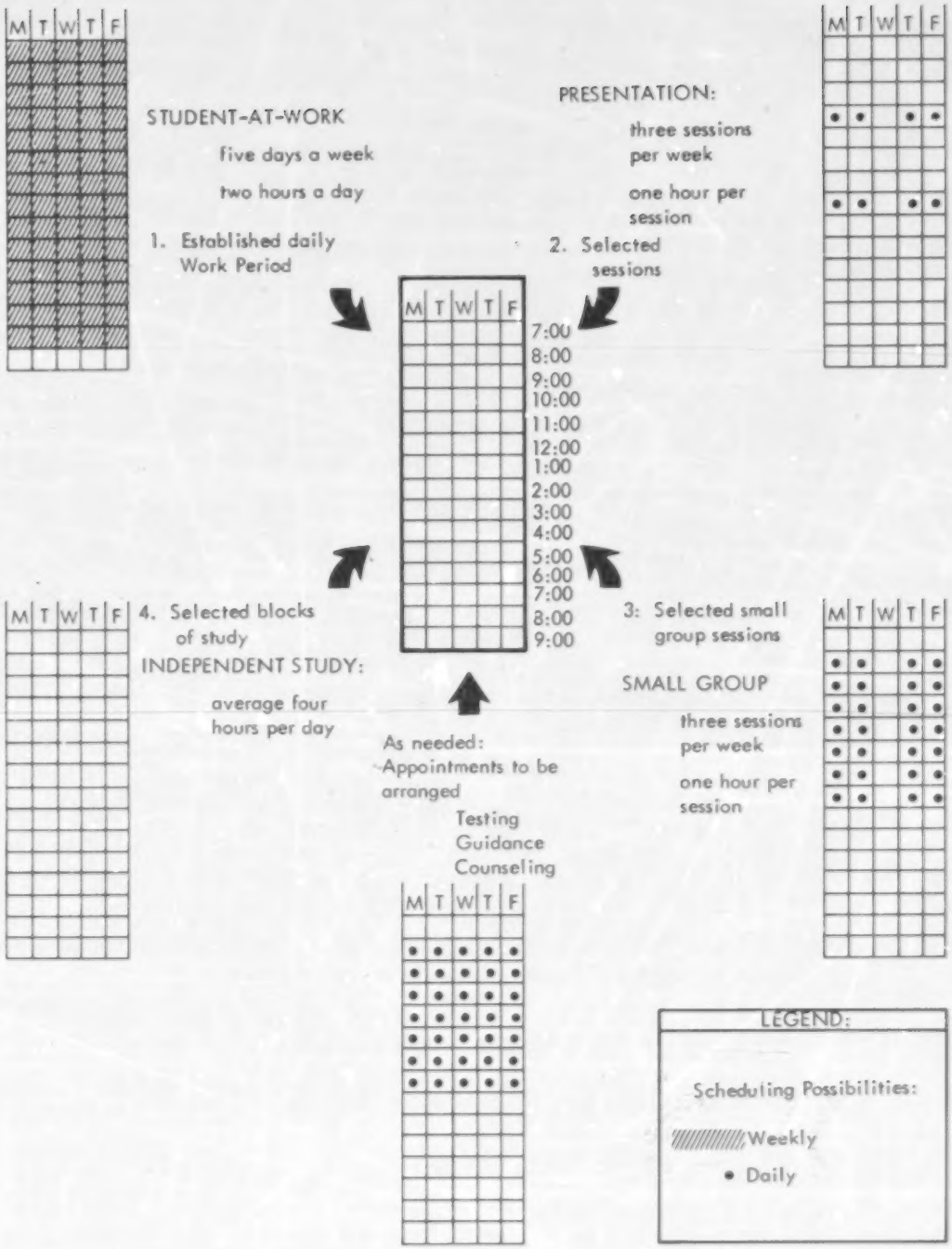

Figure 10. Schematic of Student Scheduling Sequence and Options: Two-Hour Job, Independent Study

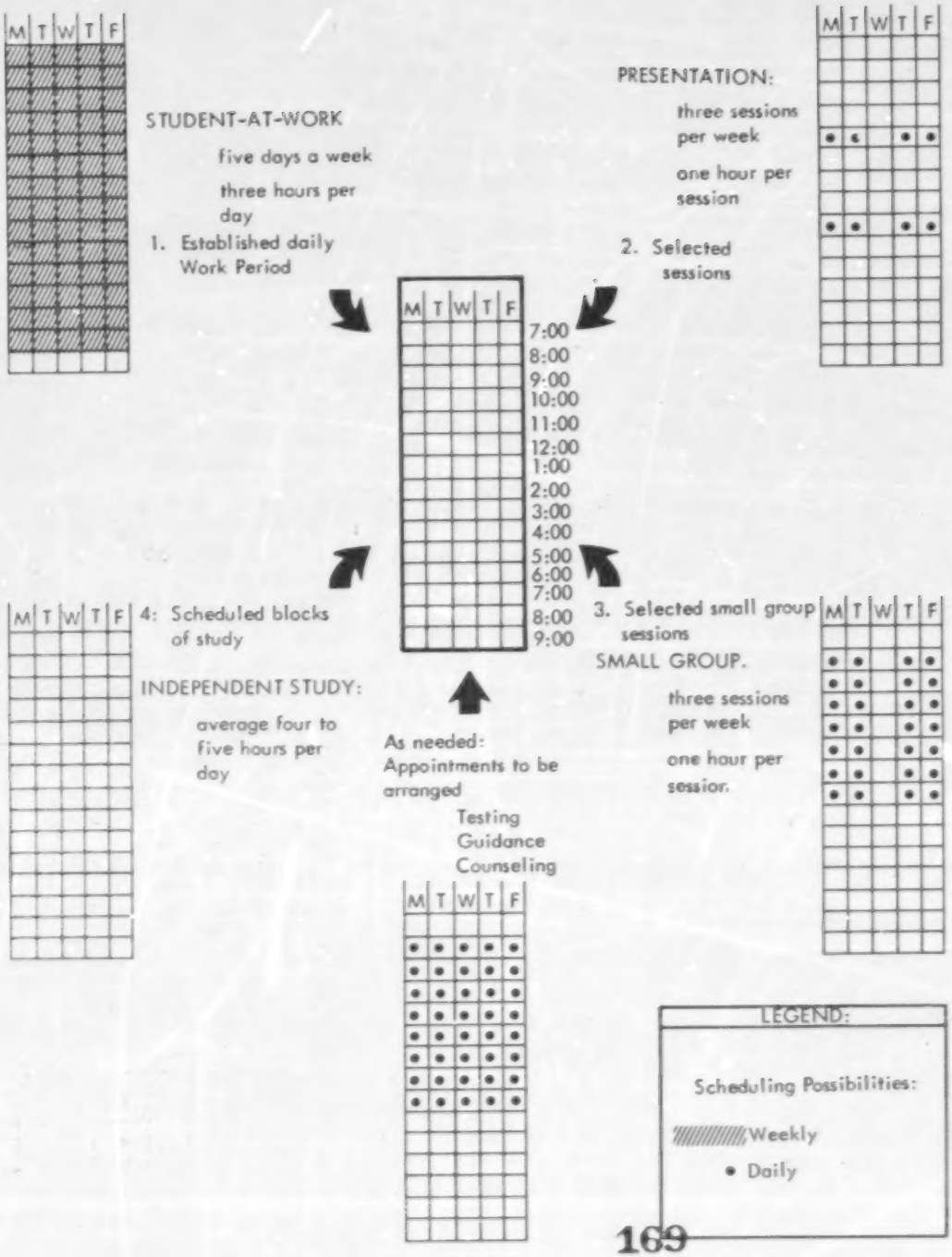

Figure 11. Schematic of Student Scheduling Sequence and Options: Three-Hour Job, Independent Study

In order to provide the required level of detail for meaningful scheduling and logistics planning, it is necessary to differentiate the structured curriculum to a greater level of specificity than simply 1,000 units. For this purpose, we have chosen to make a delineation in terms of standard subject areas; a summary of this differentiation and its distribution across grade levels is given in the figure below. The activity schedules and job allocations that relate directly to the structured curriculum are based on this delineation.

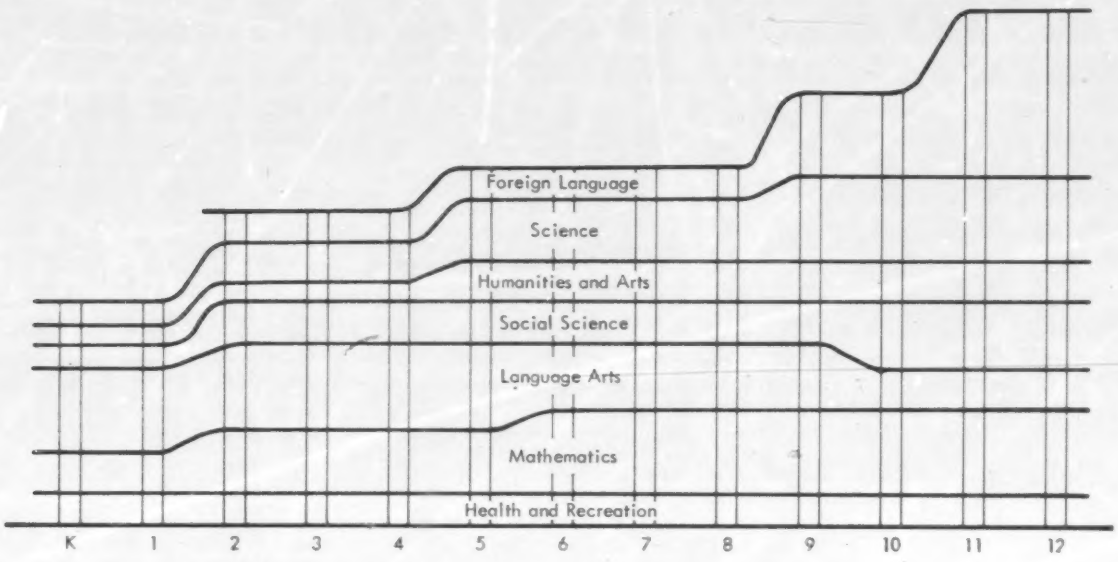

Figure 12. Distribution of Curriculum Modules by Student Level and Content Area

(Original Set: 1,000 Modules)

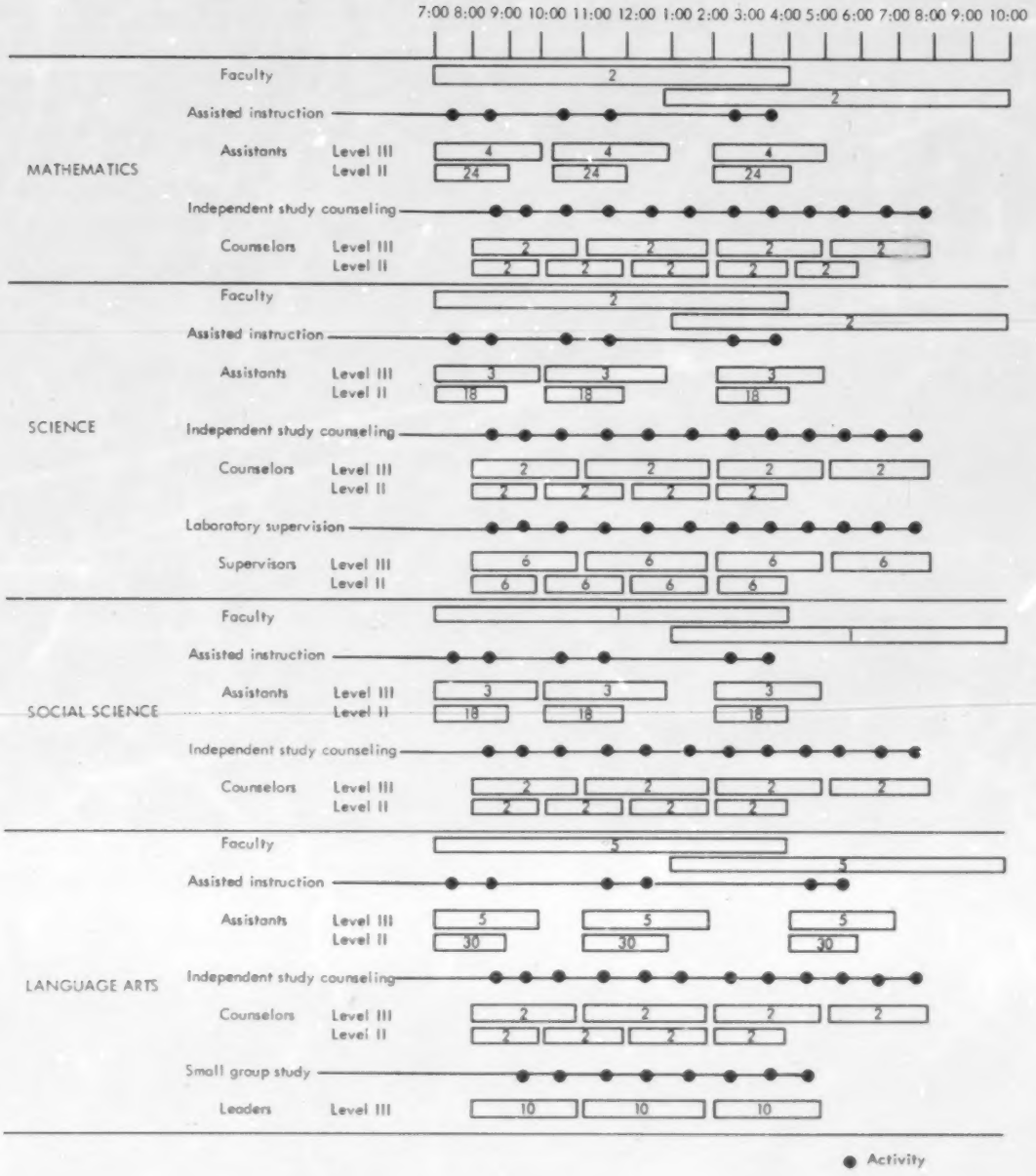

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Figure 13. Job Allocations for Instructional Services (part 1)

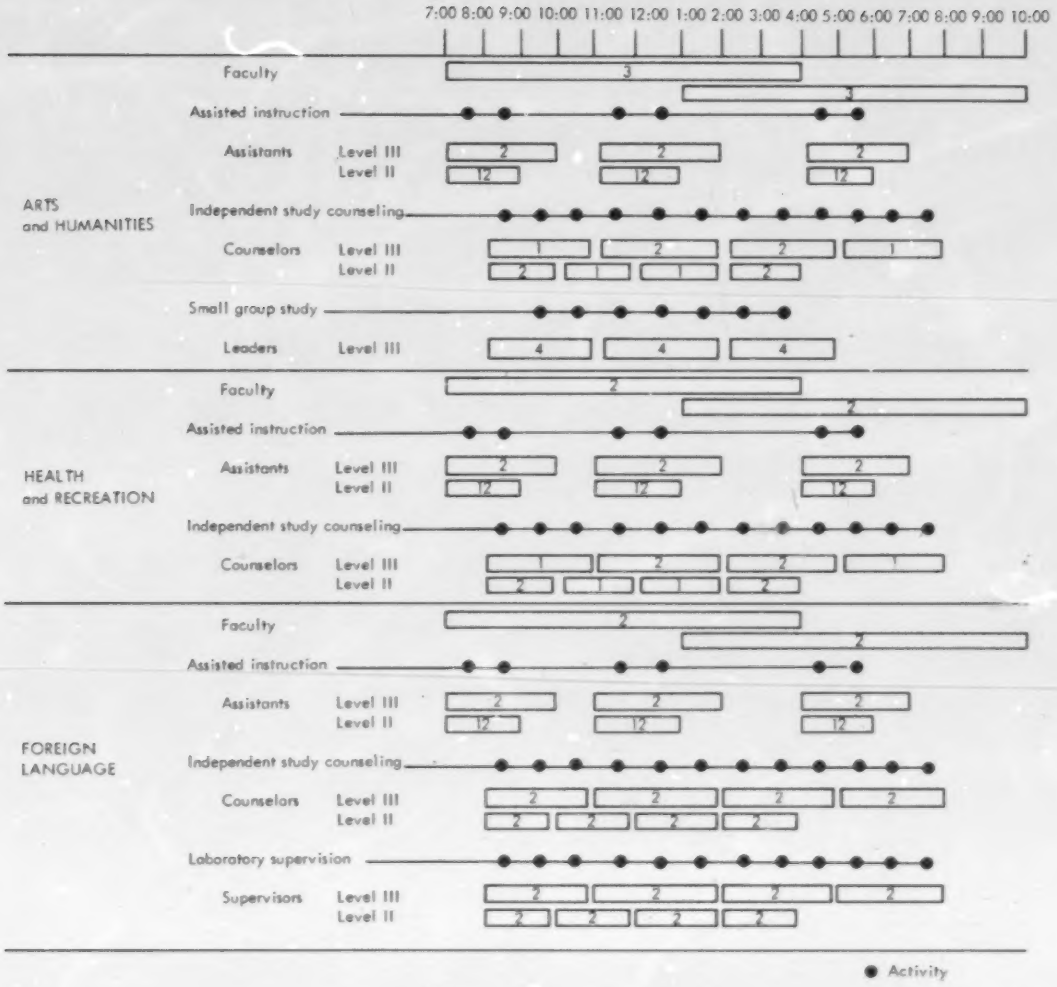

Figure 13. Job Allocations for Instructional Services (part 2)

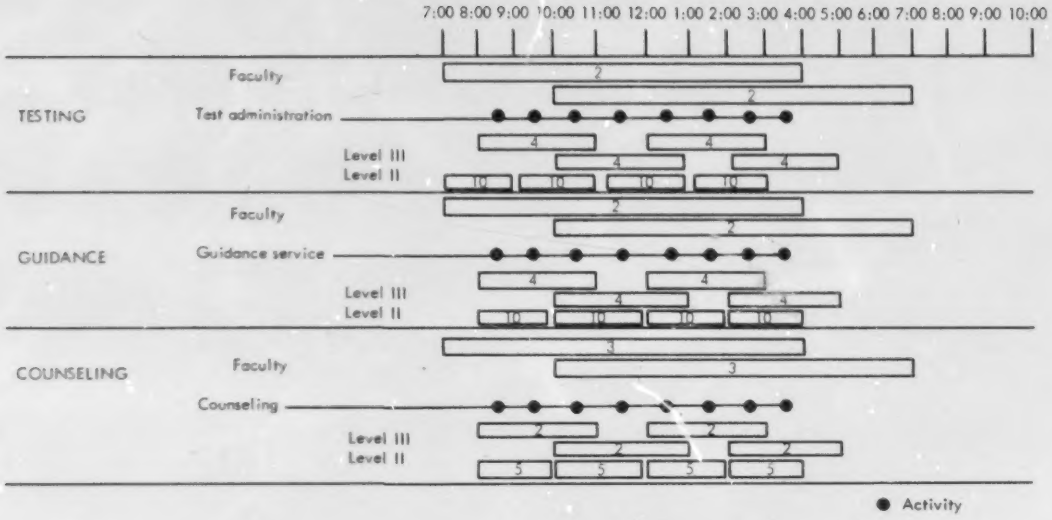

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Figure 14. Job Allocations for Instructional Support Services

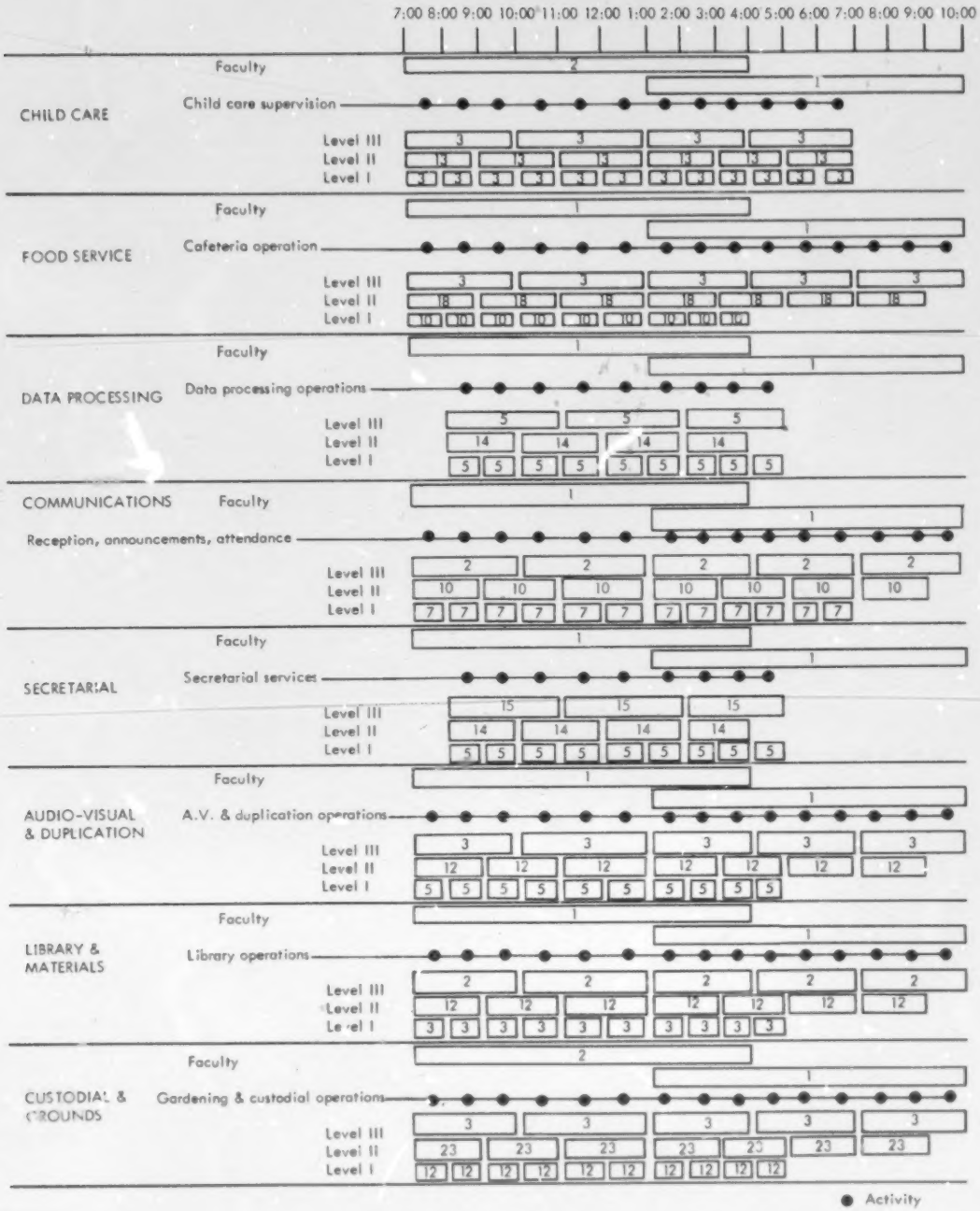

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Figure 15. Job Allocations for General Support Services (part 1)

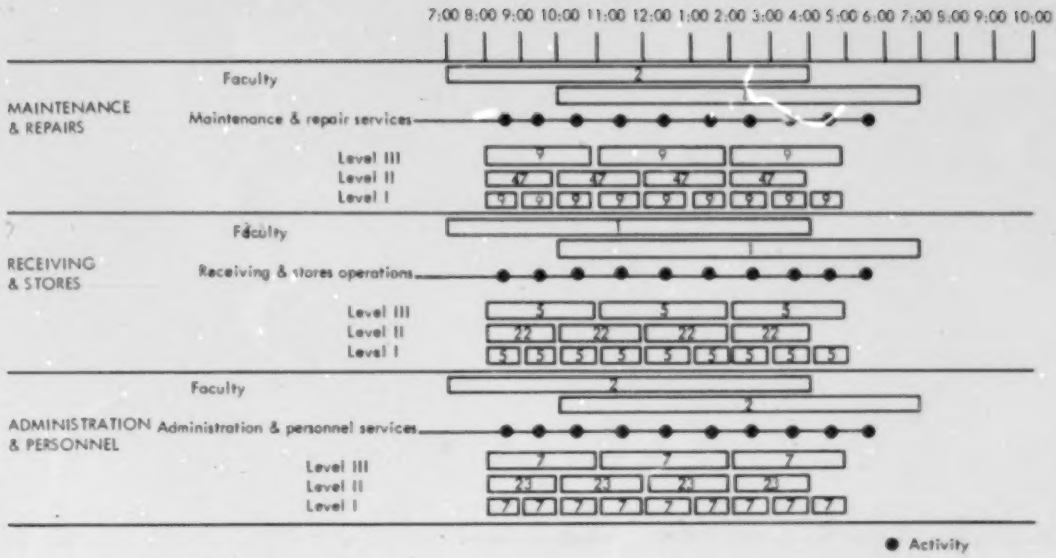

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Figure 15. Job Allocations for General Support Services (part 2)

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Helpful criticism and suggestions have been provided in oral or written form by many people who were kind enough to read and review earlier drafts of this design. Without attempting to single out those reviewers whose comments were particularly helpful or detailed, we list below the names of all those who did contribute in some way to our own understanding and reflection. It goes without saying that the appearance of someone's name on the list does not necessarily imply his endorsement or support of this design.

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